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# AMERICAN JOURNAL
## OF
# OPHTHALMOLOGY

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AMERICAN JOURNAL OF OPHTHALMOLOGY
Volume 11 May, 1928 Number 5

# THE POCKET FLAP IN CATARACT EXTRACTION

CHARLES N. SPRATT, M.D., F.A.C.S.
MINNEAPOLIS

A horizontal incision is made in the conjunctiva five millimeters above the limbus; and the conjunctiva is loosened downward to the limbus and in a pocket on either side so as to expose the upper two fifths of the limbus. A double suture is inserted and the loops laid aside. While making puncture and counterpuncture at the limbus, the conjunctival flap is first grasped on the side corresponding to the puncture, and then on the opposite side. In spite of some increase of difficulty in making the incision, and a tendency for blood to be retained in the anterior chamber, iris or vitreous prolapse is prevented, convalescence is shortened, and in the author's series of cases excellent results have been obtained. Read before the Hennepin County Medical Society, February 6, 1928.

The number of papers published in recent years on the use of a suture after cataract extraction indicates that many ophthalmologists have at last accepted a well-recognized principle of general surgery: unless drainage is indicated, clean wounds are sutured.

Williams[1] of Boston, in 1867, first advocated the use of a suture after cataract extraction. Many modifications have since been suggested. The subject has so recently been reviewed in the several papers by Ellett[2] and by Berens[3] that further remarks would be repetition. These various methods are illustrated in figure 1.

Husain[4], in 1918, published a modification of the Dimmer and Czermak[5] subconjunctival methods. A conjunctival flap was reflected from above downward, and an opening was made in the anterior chamber with a keratome. This incision was enlarged at the limbus on each side with scissors. The extraction of the lens followed. Lowell of Boston has done this operation and is much impressed with its advantages.

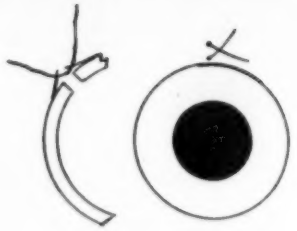
For many years I have sutured the conjunctival flap after the method of Verhoeff[6]. For the past year or more, a modification of the Czermak method similar to that described by Husain has been followed.

**Preparation:** A solution of acriflavine 1:500 is instilled into the eye every four hours on the day preceding the operation. This seems to be more efficacious in securing a sterile conjunctival sac than the use of argyrol, and less irritating than the silver nitrate solution, as suggested by Bell. Recently I have used a solution of hexylresorcinol, known as S.T. 37. This is non-irritating to the eye in one-half strength solution, does not stain the skin or dressings, and according to tests kills all common pathogenic bacteria in fifteen seconds. Three hours before the operation, five grains of barbital are given the patient to secure mental quiet. A second dose may be given an hour later if necessary, and at the same time a drop of atropine solution one percent is instilled into the eye. In all cases the tension is taken previously.

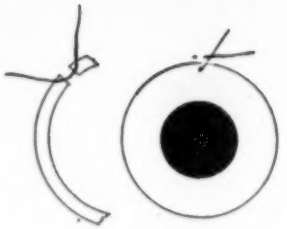
I prefer to do the operation with the patient in his own bed, as this avoids the several transfers from bed to stretcher, to table, and so on.

Anesthesia is secured by the use of a four percent cocaine solution instilled four times, at four minute intervals. Adrenalin is dropped into the eye once or twice after the cocaine. Subconjunctival injection of novocaine is rarely used, and deep orbital injections are unnecessary. The skin of the nose, lids, and face is painted with a two percent solution of mercurochrome or solution S.T. 37, and a double layer of moist gauze is placed over the face with openings for the eyes.

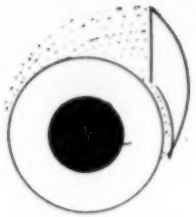
**Operation:** A Weiss speculum with solid blades is introduced, and the conjunctival sac is irrigated with a solution of S.T. 37, one-half strength, or physiological salt solution. A horizontal incision 1.5 to 2 cm. long and 5 mm. above the limbus is made in the



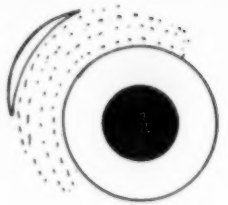
WILLIAMS
1567



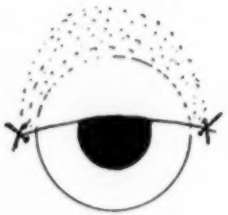
KALT
1894



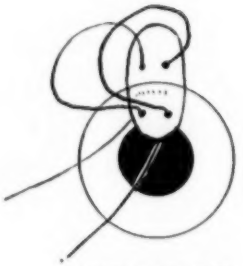
CZERMAK
1903



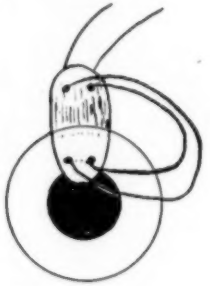
DIMMER
1907



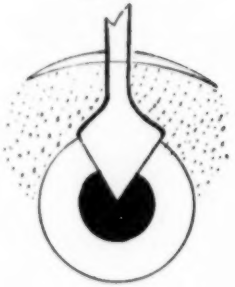
VAN LINT



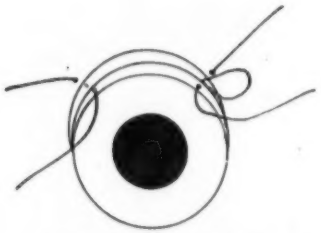
VERHOEFF
1916



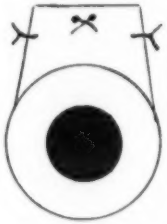
DERBY
1916



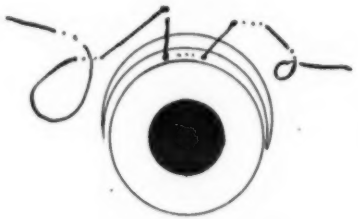
HUSAIN
1918



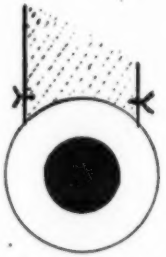
WÜRDEMANN
1924



GREEN
1925
BARRAQUER
1923



BERENS
1925



PAVIA and
DUSSELDORP
1927

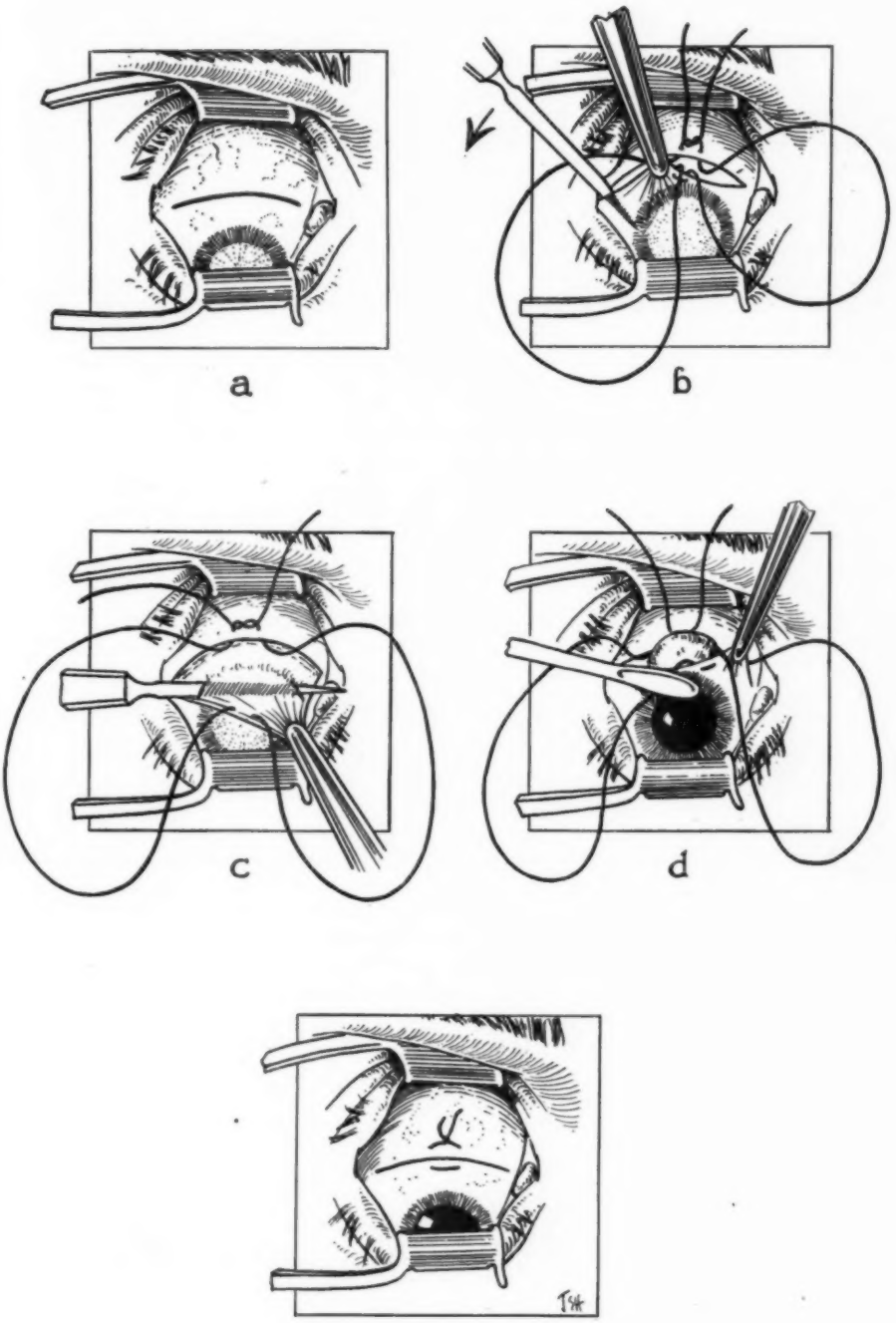



Fig. 2. (Spratt.) Cataract extraction with pocket flap.

conjunctiva with small blunt-pointed scissors. (fig. 2a.) In cases complicated by glaucoma, where a Lagrange operation is to be done, it is better to make the horizontal incision seven to eight mm. above the limbus. The wide flap gives better drainage of the anterior chamber, while the short flap is less likely to be followed by deep separation of the wound. The conjunctiva, with the episcleral tissue, is dissected downward to the limbus, and extensions are made on each side so as to expose the upper two-fifths. If the hemorrhage is troublesome, a small pledget of cotton saturated with adrenalin is placed in the pocket. A mattress suture of 000 black silk, prepared with collodion in a small round full curved needle, is now placed in the center of the two edges of the conjunctival wound. As the eyeball has not been opened, this is done easily and safely. In addition, one has definite information as to the behavior of the patient for the rest of the operation. Should he prove to be a "squeezer", the orbicularis muscle is injected as suggested by Van Lint, and a canthotomy is performed. This is necessary in only a few cases. Paralysis of the orbicularis muscle may be secured by injection of the facial nerve as suggested by Dilliard[7].

The thread is drawn to each side, forming large loops, and a single knot is made. The flap is grasped with a pair of blunt thumb forceps at the temporal portion. Standing at the patient's head, the point of a slender tapering knife, held in the right hand for operating on the right eye and in the left hand for the left eye, is placed beneath the conjunctiva in the pocket on the temporal side. The puncture is made at the limbus as in the ordinary extraction, the handle of the knife is depressed, and the counterpuncture is made directly opposite, the conjunctival flap being held to steady the eye. (fig. 2b.) The forceps are transferred to the nasal third of the flap, which is then turned down over the cornea and away from the point of the knife, thus avoiding any tendency to buttonhole the conjunctiva. The incision is completed above at the limbus. (fig. 2c.) As a rule, the anterior chamber is not evacuated until the incision is completed. The taper of the knife and the fact that the conjunctiva overlaps the puncture and the counter puncture prevent the escape of aqueous. By making a long bevel to the upper portion of the incision so as to include a part of the sclera, a Lagrange operation may be performed at the same time.

If the iris is rigid or tends to prolapse, a small iridectomy should be done. The anterior capsule is removed with a Schweiger forceps and the cataract is expressed in the usual way by the application of pressure on the cornea externally with a blunt cataract spoon or hook, the flap being held forward and up by the forceps. (fig. 2d.) In some cases counterpressure is made with a spatula on the upper edge of the wound. Any blood or cortex in the anterior chamber is removed by irrigation with Locke's or physiological salt solution. Should vitreous present, the ends of the suture are drawn tight and the wound is immediately closed, thus preventing further loss. (fig. 2e.)

Replacement of the iris can be done with a small spatula inserted on the opposite side of the central suture. No assistant is used except to hold the flap forward in making the iridectomy.

**After-treatment:** A light dressing is put over both eyes and an aluminum shield over the operated one. The patient may sit up with a back rest. The next morning the eye is dressed, atropine one percent instilled, the bandage replaced, and the patient allowed up in a chair. On the second day the unoperated eye is left uncovered and atropine one percent is used twice a day. All dressings are removed on the fourth or fifth day. The suture is easily removed at any time between the fifth and the ninth day. On account of weather conditions, one patient who had left the hospital was not seen until his fourteenth day, when the suture was removed. Patients are allowed to leave the hospital on the third to the seventh day depending on the distance to their home from the hospital. Several cases have had both eyes operated on at the same time.

I have done the above operation fifty-two times with the following

**results:**

Slight vitreous lost at operation: 4 (3 cataracts were removed with the loop.)

Secondary operations: 12.

Iris in the wound: 4.

Days in the hospital: 3 days, 8; 4 days, 5; 5 days, 2; 6 days, 9; 7 days, 9; 8 days, 4; 9 days, 5; 10 days, 2; 12 days, 1; 13 days, 3; 14 days, 2; 16 days, 1; 19 days, 1.

Age: 30–40, 2; 40–50, 5; 50–60, 9; 60–70, 14; 70–80, 20; 80–90, 1; 95, 1.

Simple, Extraction 36; combined, 16, including 4 Lagrange.

Astigmatism: none, 2; less than 1 D., 3; 1 D., 13; 2 D., 14; 3 D., 10; 4 D., 4; 5 D., 1; 6D., 2; 9 D., 2; 12 D., 1.

Vision: 5/3, 7; 5/4, 11; 5/5, 17; 5/6, 4; 5/7, 4; 5/9, 5; 5/12, 2; 5/15, 1.

These were all private cases, and an accurate determination of vision was made at the end of a month to six weeks. This accounts for better vision than is shown in the ordinary hospital statistics. Five other cataracts were removed with good operative results. All of these patients had light perception only with no projection, and the white lenses were removed for cosmetic reasons, with the hope that there might be some possible improvement in vision. There were three cases of optic atrophy, one of high myopia with retinal detachment, and one traumatic cataract with steel in the eye.

The **disadvantages** of the operation are: (1) slightly longer time to perform it; (2) difficulty of making the incision; (3) removal of the suture; (4) hemorrhage in the anterior chamber; (5) deep separation of the edges of the wound. The first two of these are of minor importance. The removal of the suture has given rise to little or no complaint on the part of the patients, and this objection could be used against any wound suture. In a week to ten days the blood is absorbed with no lasting effects. In two cases, there was separation in the depth of the wound giving rise to considerable astigmatism. I feel that, had this method not been followed, a more serious condition—iris prolapse—might have occurred.

The **advantages** of the pocket-flap operation are: (1) The preliminary dissection of the flap enables one to determine the behavior of the patient, and the remainder of the operation may be governed accordingly. (2) The insertion of the suture can be safely and easily done, as the interior of the eye is not opened. (3) The incision for the extraction is made beneath the conjunctiva and is in a sterile field, thus eliminating exogenous infection. (4) Should the eye show evidence of glaucoma, a sclerectomy may be performed at the same time as the extraction. (5) Iris or vitreous prolapse is prevented by the tight closure of the wound which is obtained by drawing the ends of the suture. (6) Rapid healing with short convalescence follows, as every portion of the cornea is nourished by circulation from the conjunctiva. (7) Injury during convalescence is reduced to a minimum, as the wound is as firm at the end of twelve hours as is the open wound or one with a single central suture with open angles is at the end of several days. (9) The patient's stay in the hospital is decidedly shortened; he may sit in a chair in twelve hours, and several have returned home on the third to the fifth day. (9) Both eyes may be operated on at the same time.

*900 Nicollet avenue.*

## Bibliography

[1] Williams, H. W. Royal London Ophth. Hosp. Rep., 1867, v. 6, pt. 1.
[2] Ellett, E. C. Contributions to Ophth. Science (Jackson birthday volume), p. 229.
[3] Berens, C. Brit. Jour. Ophth., 1926, v. 10, no. 11, p. 577.
[4] Husain. Indian Med. Gaz., 1918, v. 53, Jan., p. 12.
[5] Czermak. Deutsche Ophth. Gesell., 1903, p. 115.
[6] Verhoeff, F. H. Arch. of Ophth., 1916, v. 45, p. 479.
[7] Dilliard. Fisher's "Senile Cataract", 1923, p. 97.

# CORRECTION OF PTOSIS BY FASCIA LATA HAMMOCK

GEORGE S. DERBY, M.D., F.A.C.S.

BOSTON

The two ends of a strip of fascia lata are carried through vertical tunnels under the skin of the lid, and are attached to the frontalis close to the periosteum. From the Department of Ophthalmology, Harvard Medical School, and the Massachusetts Eye and Ear Infirmary.

"There is nothing new under the sun," and it may be diffidently suggested that 50 per cent of the "new" operations and "new" instruments which are described in such profusion in our literature might better never see the light of day.

It is, therefore, with hesitation that I call attention to a modification of Reese's modification of Machek's operation, using fascia lata at Lancaster's suggestion. It may have appeared before. If so, I have failed to find it. It may not meet with approval. In the last four years it has proved its worth to me.

In 1914, Machek published a ptosis operation which consisted in dissecting free two bands of skin from over the tarsus near the margin of the lid. Two tunnels were then made under the skin, emerging in the eyebrow. One tunnel was near the inner margin of the lid, the other, at the outer. A band of skin was then passed up through each of these tunnels. They were drawn tight and sutured in position, thus raising the lid the required amount.

In 1923, Reese published a modification of this procedure. Instead of using skin, he dissected free two loops of orbicularis and passed them up through similar tunnels, fastening them to the frontalis just above the eyebrow.

In the discussion of this operation, I called attention to the fact that these loops were comparatively weak, and that once or twice I had pulled off a loop. In the same discussion, Lancaster mentioned that, feeling the need of a stronger piece of tissue than the muscle loop, he had utilized a strip of fascia lata, one end fastened to the tarsus by a mattress suture, the other fastened to the frontalis.

The operation which I have used is as follows:

1. An incision is made through the skin down to the tarsus, along the edge of the lid just above the lashes. The upper lip of the skin is dissected back far enough to allow the hammock of the fascia lata to fit in under it and be covered.

Fig. 1. (Derby) Dotted line shows incision through skin at margin of lid.

2. As in the Machek operation two tunnels are made under the skin to points somewhat above the eyebrow. This is best done with a double-edged sharply pointed knife.

3. A piece of fascia lata approximately 7 to 9 cm. long and 1 cm. wide is then secured. A mosquito clamp has already been passed downward through each lid tunnel.

4. An end of the fascia lata is then placed in each clamp and the fascia is drawn up into position.

Fig. 2. (Derby) Skin dissected back from tarsus. Dotted line shows position of subcutaneous tunnels.

5. With a full-curved needle the fascia on one side is sutured with one or more deep stitches of silk or catgut

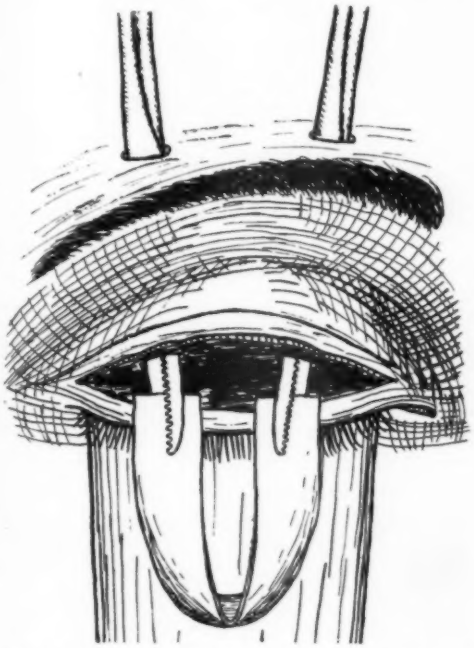


Fig. 3. (Derby) Hemostats introduced through tunnels grasping strip of fascia lata ready to be drawn up through and sutured in position over frontalis.

to the frontalis as close to the periosteum as possible. The fascia lata hammock is then pulled tight by the loose end and that is then sutured to the frontalis in a similar way. One or two small skin stitches may be necessary.

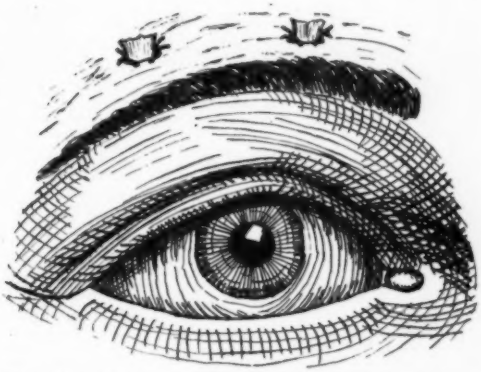


Fig. 4. (Derby) Result at end of operation. Lid drawn up to fascia lata hammock, two ends of fascia lata hammock protruding through skin above eyebrow and sutured in position.

I usually leave the ends of fascia protruding from the skin for convenience' sake, but this is not necessary, and they may be buried and the skin sutured over.

The skin incision in the thigh is next sutured. Formerly, I sewed up the gap in the fascia lata, but, learning that it was not necessary, I discontinued the practice.

At the end of the operation, the lid is held firmly elevated by the strong fascial band and the ptosis is overcorrected, a fact which may give rise to unnecessary anxiety. The palpebral fissure is filled with White's ointment and covered with gutta percha tissue, using a monocular dressing for a week. At the end of that time, the stitches are removed.

In the first week or two, the swelling of the upper lid obscures the result, but this gradually subsides. The tissues slacken up, and the overcorrection disappears. Naturally, the upper lid will not come down as far as the upper lid of the other eye. If it did, the operation would have been a failure, but no harm has ever resulted in my experi-

ence, and I have been doing this operation now for four years. The results are excellent and permanent if this period of observation be long enough.

It is not necessary to suture the incision in the skin along the lid margin. The strip of fascia lies on the tarsus and the skin covers it.

After having cut the tunnels, it may be difficult to pass the mosquito clamp. To avoid this difficulty, I grasp the projecting blade of the knife lightly with the clamp and on withdrawing the knife through the tunnel, the clamp follows and emerges at the lid margin, where it is left in position until the strip of fascia has been obtained.

The operation is a simple one to perform.

*23 Bay State road.*

### References

Machek. An operation for ptosis, etc. Arch. of Ophth. 1915, p. 539.
Reese. An operation for blepharoptosis. Trans. Amer. Ophth. Soc., 1923, p. 71.
Lancaster. Discussion of Reese's paper, loc. cit., p. 76.

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## SUBCONJUNCTIVAL LENS DISLOCATION

PRIMARIUS DR. JULIUS FEJÉR

BUDAPEST, HUNGARY

(Translated from the author's manuscript)

In two cases of injury by a cow's horn, here reported, the outcome differed from the usual experience in this type of case in that excellent visual acuity with correction was obtained. In each case, not long after the injury, the conjunctiva was opened surgically, the prolapsed or folded part of the iris excised, and the lens removed in its capsule. Dr. Fejér is chief surgeon of the eye department of the Hospital of the Jewish Community in Budapest.

Subconjunctival dislocation of the lens is among the most serious injuries of the eye, and can only occur if the sclera in the region of the limbus is ruptured in an equatorial direction for a length corresponding to the size of the lens, so that the entire lens is able to slip out through the gap thus produced. Since the conjunctiva is sufficiently elastic and loose in its attachment, it yields to the incidental pressure and does not tear through at this point.

Rupture of the sclera always occurs at a typical point, above, centrally, parallel to the limbus, since the sclera always undergoes the greatest stretching at the point opposite to the trauma and ruptures at the summit of this stretching. This was always Arlt's idea of the mechanism, whereas others ascribed the blame to the sharp bony margin of the orbit and were of the opinion that in this way as the result of the blow, the eyeball had to rupture at its weakest point, near the limbus.

On the basis of thorough investigations, Müller determined that the blow extremely seldom reached the eye downward and outward—as previously had been assumed—but up and in; but he was also able to show that the bony margins of the orbit were not able to arrest the blow, but only to change its direction.

In the histories of the cases described in the literature we encounter again and again the same factors, blows from cows' horns, fists, extended fingers, sticks or iron railings, or collision with the projecting margin of some such object as a chair. Sachs was able to ascertain the nature of the object causing the injury in ninety-seven cases, among which the blow of a cow's horn was responsible twenty-three times, while this cause was responsible in fourteen of Müller's forty-five cases, in fourteen out of twenty-nine at the Jena clinic, and in twenty-six out of sixty-two reported by Purtscher. Eversheim was able to collect from the entire lit-

erature of the subject 285 cases of blows by the horns of cattle, and in a half of these cases there was scleral rupture.

Zeisler and Geisler remark that subconjunctival dislocation of the lens occurs in two thirds of the cases in individuals between the fortieth and the sixtieth year, but almost never in children.

In their opinion, before such a complicated injury can occur two conditions are necessary: a certain degree of hardness of the lens and a definite rigidity of the sclera. If we examine the data contained in the various statistical treatises, it becomes manifest that in older persons the sclera but younger persons the cornea is apt to rupture.

These serious injuries have, as is well known, usually an extremely tragic termination. Enucleation usually becomes necessary, and only in a small percentage can a part of the visual function be saved. On this account the publication of two cases with extremely favorable termination seems entirely justifiable.

**Case 1:** The first case has to do with a fifty-year-old countrywoman, who applied for admission to my division of the hospital on September 15, 1926. She gave a history of having been struck by a calf a few days before. After the injury she felt a dull pain in her head and completely lost the visual acuity of the injured eye. Upon admission, the eyelids and the tarsal conjunctiva were normal, but the bulbar conjunctiva was injected and chemotic. The cornea was normal. There was moderate ciliary injection. The anterior chamber was strikingly deep, and contained blood downward and outward, the iris had a greenish discoloration, and there was pronounced iridodonesis.

At the nine o'clock position there was a coloboma with irregular margins. Upward and a little to the nasal side from the limbus there was marked bulging of the bulbar conjunctiva. At the point of protrusion a roundish resistance could be felt, entirely corresponding to the lens. The tension was lowered, minus one. The injured eye saw only hand movements. The left eye was normal and had vision of 5/5. On September 16, I removed the luxated lens, cutting through the conjunctiva over the lens, removing the whole lens together with its capsule, cutting away the prolapsed part of the iris, and closing the conjunctival wound with two sutures. The loss of vitreous was minimal. The hyphema persisted in the anterior chamber, but the blood was absorbed in a few days, and in a week the patient left my section after removal of the sutures. At this time the eye still saw only hand movements, and blood was visible both in the vitreous and in the hospital. She reported again after six months. The scleral wound had healed flat, there was a regular coloboma to the nasal side, and a very small amount of secondary opacity. The fundus was easily seen. The vision of the right eye with +13.00 D. sph. +1.00 D. cyl. axis 90° was 5/7, that of the left 5/10, and with +1.50 sphere 5/5. In the right eye the corneal astigmatism was 2. D. at 90°, in the left eye 0.5 D. at 90°. The end result of the severe injury therefore equals that of a successful cataract operation.

**Case 2:** My second patient was the fifty-seven-year-old wife of a farmer, who came for treatment on October 12, 1925. She told of having been struck in the right eye by a cow ten days previously. Violent pains in the head were followed by loss of consciousness, and when she came to herself she noticed that she was scarcely able to see anything with the right eye. Upon admission the eyelids and lacrimal apparatus were normal, but even through the closed lids a protrusion as large as a bean was to be seen in the middle of the upper lid. The tarsal conjunctiva was healthy, the bulbar conjunctiva upward and inward was filled with blood.

At the center above, near the limbus, a bean-sized swelling was to be seen on the sclera, covered by healthy conjunctiva. A three to four millimeter tear was visible in the sclera three or four millimeters from the limbus. Fine shreds of blood were floating in the deep anterior chamber, the pupil was

distorted, the iris being retroverted so as to give the appearance of a coloboma. A red reflex could not be obtained, the vision was limited to hand move-

Subconjunctival lens dislocation (Fejér)

ments. The tension was reduced. The left eye was normal. My assistant, Dr. Hollós, was kind enough to make a drawing of this condition. (See illustration.) Next day, after slitting the conjunctiva, I removed the lens in its capsule, excised the folded part of the iris, and closed the conjunctiva with two sutures.

In a short time the blood was absorbed from the anterior chamber, and after removal of the sutures the patient left the hospital without irritation of the eyeball. The vision was then about equal to counting fingers at a distance of twenty centimeters. With the slit-lamp hemorrhages were visible throughout the vitreous. In a month the visual acuity had improved to counting fingers at a distance of one meter, in spite of the fact that opacities were still to be seen in the vitreous. There was no irritation of the eyeball. A year later, in reply to my inquiry by letter, she informed me that she was satisfied with her visual acuity and the condition of her eyes.

The object of my communication is to show that even such severe injuries may run a favorable course, if the wound remains closed, if no infection develops, and if the lens is removed within a fairly short space of time.

*V. Ker, Nador-Utca 11. Sz.*

# PHOTOMICROGRAPHY OF THE LIVING EYE

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NEW YORK

The author explains the technical problems involved in obtaining photographs of the visible structures of the anterior segment of the eye under high magnification. He reproduces some photomicrographs of the living iris, and describes the apparatus which he employs, in which the usual slit-lamp illuminating system is adapted to photographic use.

In previous communications on this subject, the author has shown the results obtained in a large number of cases in which photomicrographs of the anterior segment of the eye have been taken. The methods used in making them have also been discussed at some length. These are simple and well within the ability of the ophthalmologist who wishes to preserve pictorial case records of sufficient detail to be of benefit to himself and informative to others who may consult them.

Consider merely the matter of a published communication, and the advantage to be gained in having it informatively illustrated. A good photograph will convey in very little space what otherwise might consume much columnar area, if word description is to be relied upon. Additionally, it is not given to everyone to be able to produce in words an accurate and complete description of what he wishes to portray. Yet until recently, one who wished to write on ophthalmic subjects was forced, for lack of better means, to rely solely on this descriptive method of explaining his ideas and cases, except possibly where he had the means as well as the opportunity to employ an artist to make drawings for him. And the expense alone of this procedure has been prohibitive to many.

It is true that photography has been recently utilized to this end in the ophthalmic journals and to a very limited extent in recent text books of ophthalmology, but the results are scarcely encouraging. One has but to turn to the pages of any publication of this kind to discover abundant proof of this opinion. And the reasons for this are not difficult to find, as will be shown.

First let us consider the photographs as they are obtained from the original negative. The usual lenses employed to do clinical photography are rarely of shorter focus than six inches and not usually of an aperture to exceed f4.5. Now the task of photographing an eye with such equipment is not only beset with much difficulty, necessitating as it does either a long exposure or an intensely brilliant source of light, but, provided the picture is obtained at all, it is frequently deficient in the following particulars: (1) Sharpness of detail: The long exposure necessitated by the small lens aperture makes it almost impossible for the subject to remain immobile during the exposure. (2) Correct rendering of color values: In photography of the eye, a range of color values comprising the larger part of the spectrum is encountered, with perhaps the chief emphasis in the region orange to red. Photographed by white light from any of the ordinary sources, the violet and ultraviolet so overbalance the longer wave lengths that pigmented structures are to a certain extent suppressed by fogging, unless carefully balanced filtration of the light is practised. (3) Size of detail: This defect is probably the most serious drawback to be encountered. Provided all other defects can be eliminated, the size of details in the original plate or film will still be too small, and it is mainly with this aspect of the photographic problem that the present paper will deal.

Why the photomicrograph? Because it shows structures in sufficient detail to be informative. When an ordinary photograph of an eye is taken under the usual circumstances, the eye itself is merely a detail of the face; the

cornea, the iris, and the lens with relation to the eye as a whole are on the verge of being microscopic; while such an object as, let us say, a posterior polar cataract on the same scale would certainly be classed as microscopic. All these structures then occupy on the photographic plate very minute areas with relation to the total area of the plate.

There is no questioning the fact that the detail, if the picture is properly taken, exists in the negative; the problem consists in getting it out. For a picture in most circumstances must be reproduced to fulfill its greatest usefulness; merely a good negative will not suffice, as it unquestionably does in x-ray work. And, in order that good eye pictures may be had, it becomes necessary to make them from the original negative by any one of several processes.

From the point of view of greatest usefulness as well as from that of economy, the half-tone process is the one of election; the lithograph will not here be considered because of its limited usefulness and the expense and time involved in making it, when compared with the utilitarian half-tone. But this process, though widely utilized, has very definite limitations, and these must be known and appreciated if good reproduction is desired, because they will limit the extent to which the detail of the original negative may be duplicated.

Of first importance is the quality of the paper on which the final printing will be done. The grading of paper is various, as may readily be seen under the microscope, from the loose and uneven texture of news-print paper to the finely surfaced finish of the filled and processed gloss papers. Now the texture of the paper on which the half-tone is to be reproduced will determine within certain limits the number of lines to the inch used in making the cut, or it should at any rate wherever possible. For the half tones which it is sought by this means to produce are accomplished by means of dots made from tiny projections from the face of the cut, by the printing process, these being more closely spaced in the darker shadows and more widely in the lighter. But the closeness to which these dots may be spaced, and the fineness of the dots themselves, are a function of the texture of the paper and the determining factor in the production of the half tones. It would be simple to argue the more extensive use of the better grade papers in the interest of finer half-tones, but the disadvantage accruing from increased cost becomes at once apparent, and while there is no doubt but that better paper would assure finer reproduction, it must at the same time be remembered that the half-tone cut must be prepared in some way from the original photographic negative. And while the excellence of the cut may be what you please, it can in no particular exceed the quality of the negative from which it is made, though it may equal it. In making this statement it is of course conceded that by retouching such a condition may in a degree be realized and sometimes is. But the point to be stressed is that in the numerous processes between the first negative and the final print the possibility of loss of detail entailed by the limitations of each is very considerable.

The half-tone plate is prepared photographically from a print made from the original negative, and the quality of this print is of first importance. The size of the half-tone cut will be determined by the column width of the book or journal which is to print it, and in preparing the half-tone plate the size of the print may have to be enlarged or reduced. While reduction of size is of no particular disadvantage in most instances, unless it is carried to extreme, enlargement on the other hand may seriously impair sharpness of definition. But in all cases the quality of the print from the original negative, as may be seen from the foregoing, plays a most important rôle. It will be apparent by now that what does not exist cannot be reproduced, and that what is present may be reproduced only within the limitations imposed by the physical conditions

governing the many steps of the process.

It will therefore be apparent that provided other considerations, mainly topographic in character, can be successfully met, the photomicrograph offers the greatest number of chances for successful results where clarity and preservation of detail are desired. The matter of contrast does not need to be considered comparatively, as the conditions in this respect are the same for the enlarged photograph and for the photomicrograph. But topographic considerations are of importance. It is conceded that to obtain greater detail by higher original magnification a more limited field of view must be expected and it is granted that greater resolving power is obtained at the expense of depth of penetration, but are there not cicumstances in which detail of structure is more to be desired than anatomic relationships?

No claim is made that the photomicrograph can possibly fulfill all the conditions under which it might be desirable or necessary to photograph the human eye, but it will do that which has heretofore been very indifferently accomplished, namely, provide negatives of large scale detail from which vastly better half-tone cuts for purposes of illustration may be had.

In support of this contention, a number of such cuts are shown. Figure 1 is a low power photomicrograph of a normal eye. As a result of picturing a great number of otherwise normal eyes, on a large scale, it has become increasingly apparent that in very few is the pupil perfectly round, but rather pear-shaped. And the diversity of architecture of the iris is infinite. Not only may it be said that no individual's iris duplicates in both architecture and color that of another; but it may also be cautiously mentioned that except in rare instances the architecture of one iris is dissimilar from that of its fellow.

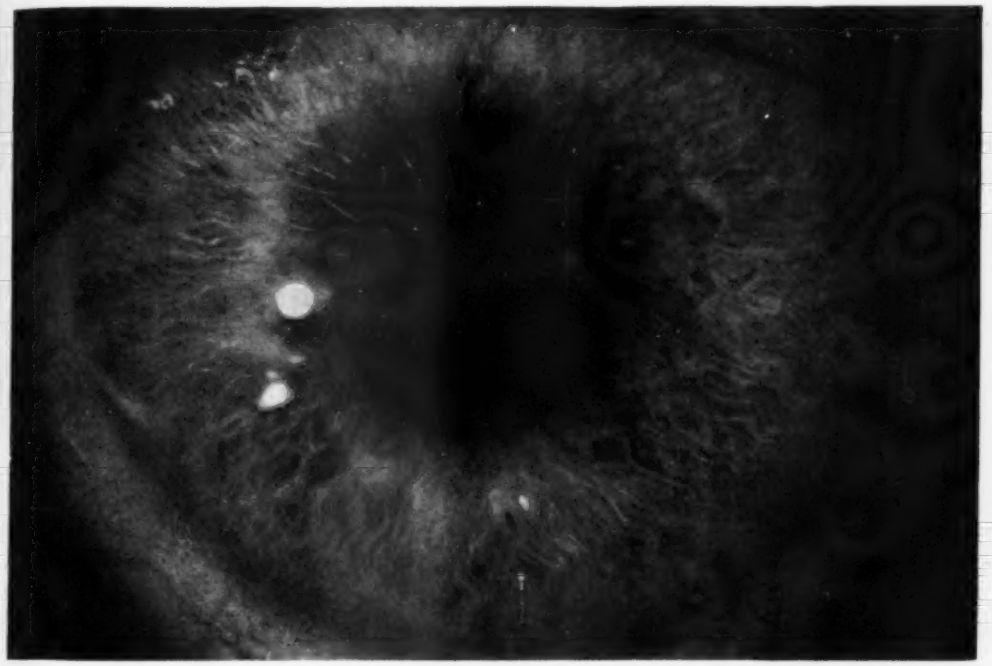

Fig. 1. (Redway) Low power photomicrograph of a normal eye, showing complex architecture of iris.

Whether this observation and the present possibility of obtaining reliable photographs may have some usefulness in the field of criminology as an adjunct to the finger print method of identification, it is yet too early to say,

but the possibility is interesting to contemplate. While detailed photomicrographic study of a large number of irises in cases of glaucoma opens a fertile field for research, a similar field is open for the study and record in vivo of tumors of the iris and the pathology of the lens.

Figure 2 shows a low power photomicrograph of the iris of a young girl, and reveals the startlingly beautiful architectural detail of the structure. It is in a way unfortunate that the corneal light reflex cannot be entirely suppressed in the low power photographs as it can successfully be dealt with in the higher powers by reason of the contraction of the angular field.

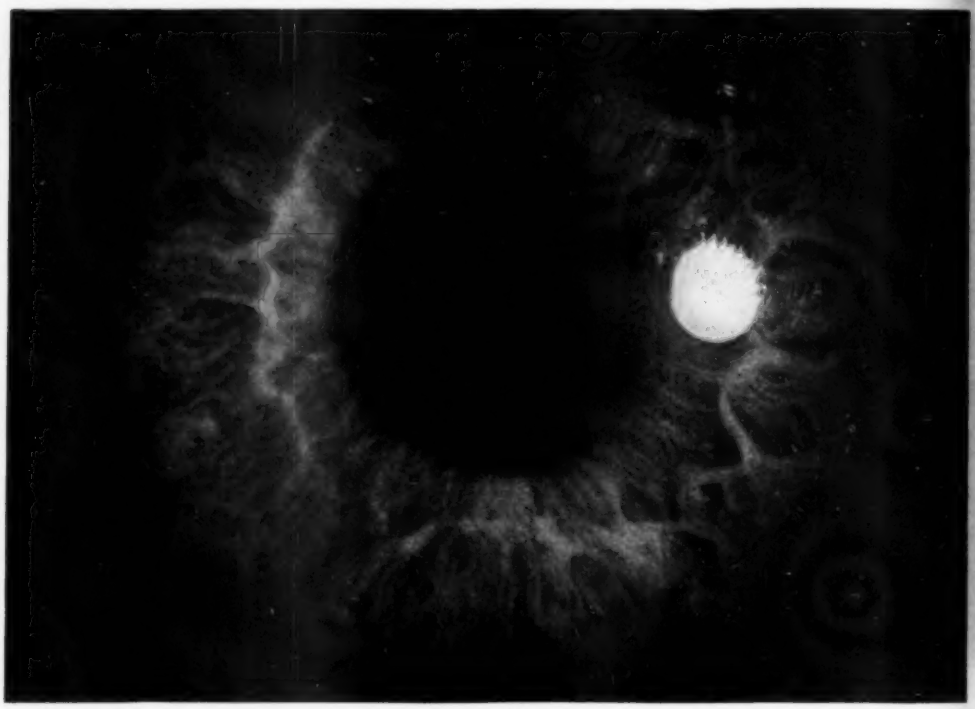

Fig. 2. (Redway) Low power photomicrograph of iris of a young girl.

Figure 3 presents a high power photomicrograph of another normal iris showing with great fidelity the pigmented border and the detailed structure of the stroma. This photograph also illustrates another very essential point in the physical structure of photographic plates, namely the relation of "grain" to the size of detail.

The emulsion covering a photographic plate is not an amorphous substance, but one consisting of minute grains of silver of varying size and fineness, so that the high lights on the negative consist of areas where this granular silver has been most abundantly reduced by the incident light. Naturally the grains are microscopic, but this does not invalidate the statement that any detail appearing as a high light or a half tone is composed of contiguous dots of varying degrees of density.

Now while the dots of metallic silver are not apparent to the eye in a direct print or moderate enlargement from the original negative, they become so when the image is photographically enlarged to a point at which the size and separation of the dots correspond to the visual acuity, or minimum separabile, of the spectator's eye. Thus in the original negative it is logical to attempt to procure detail sufficiently magnified to avoid the necessity of subsequent enlargement so

great as to render visible the grain of the negative.

Thus may faithful detail be secured photographically and be reproduced by the half-tone process to the betterment of the art of illustration in general, and to the advancement of ophthalmic uses in particular.

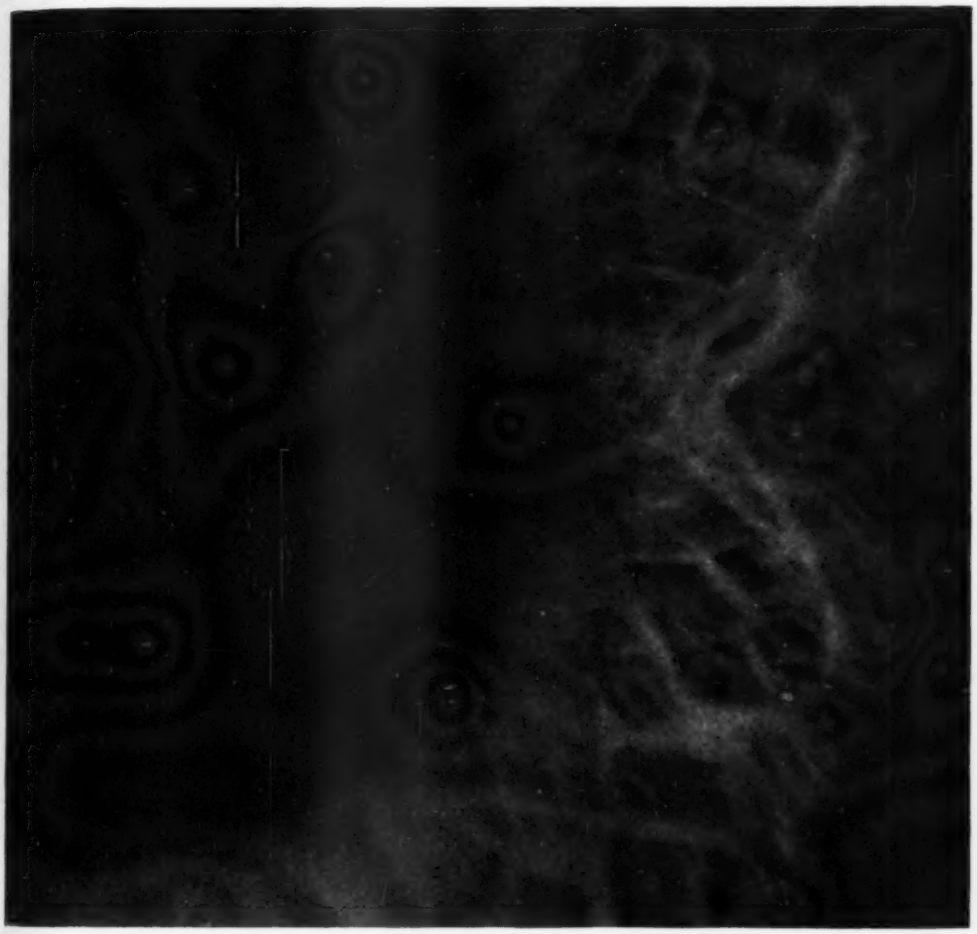

Fig. 3. (Redway) High power photomicrograph of another normal iris.

## Apparatus

A glance at figure 4 will give a rough idea of the apparatus used in making the photomicrographs. Essentially it consists of a heavy cast iron base on which another casting is placed to act as the microscope bed. The bed is movable laterally and back and forth by means of two rack and pinion gears. On this bed is mounted the microscope and the revolving arm which supports the light source. The advantage of this arrangement is that, as in the case of the slit-lamp, the angular relation of the incident light may be infinitely varied with respect to the optical axis of the microscope. The microscope may also be rotated about its central support, and may be raised or lowered as desired.

The microscope barrel has been altered slightly by affixing a threaded collar by which the photographing attachment may be secured in place. This affords a fixed focus camera, as the plate is always at a definite distance from the objective. Suitable oculars may be inserted as usual if desired. A prism placed in the barrel of the device

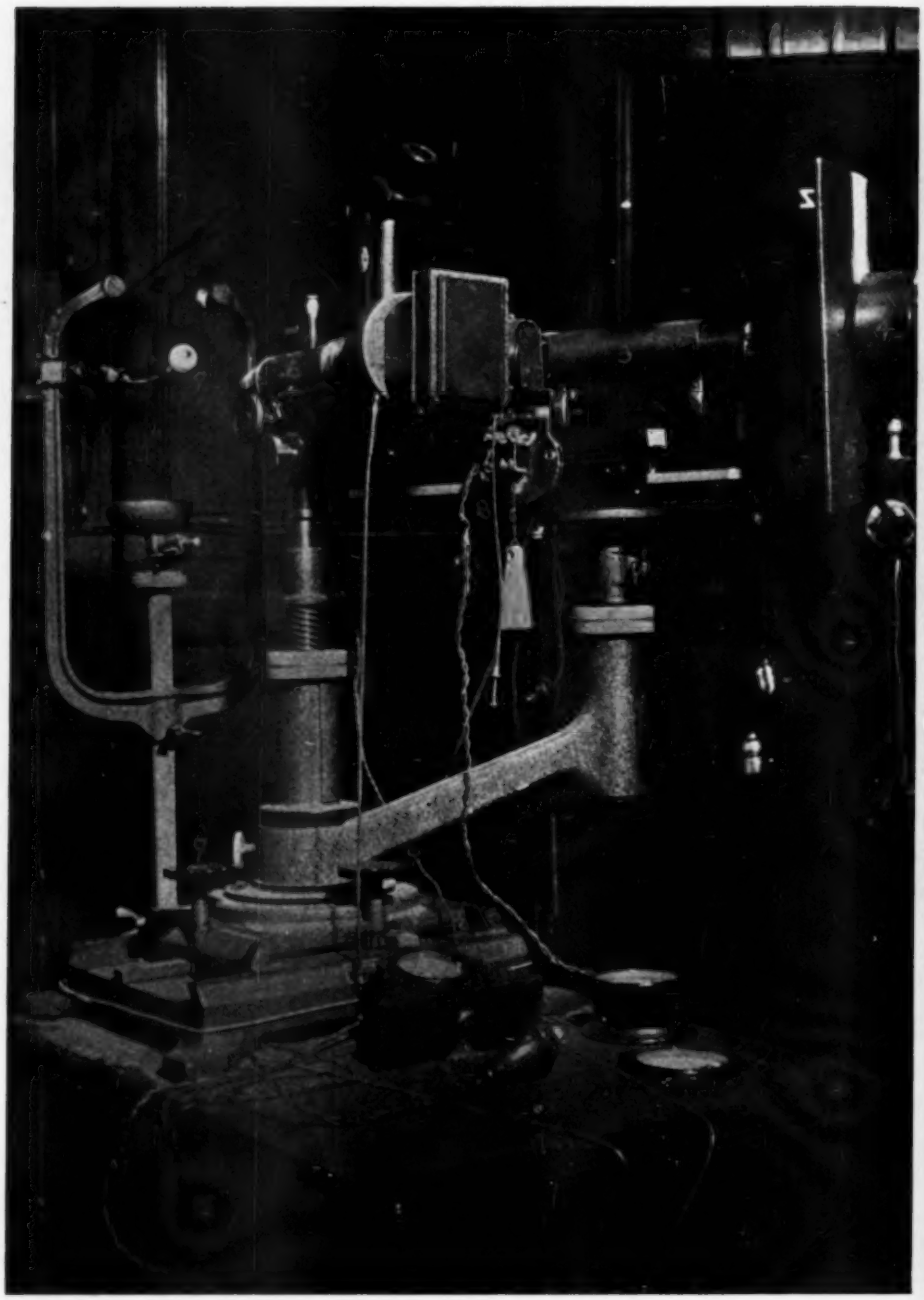

Fig. 4. (Redway) Complete apparatus. 1, view finder. 2, camera with plate holder in place. 3, light-excluding tube. 4, arc housing. 5, sheet-iron light screen. 6, microscope. 7, artificial eye in place for centering apparatus. 8, electromagnetic shutter release. 9, rack and pinion gears.

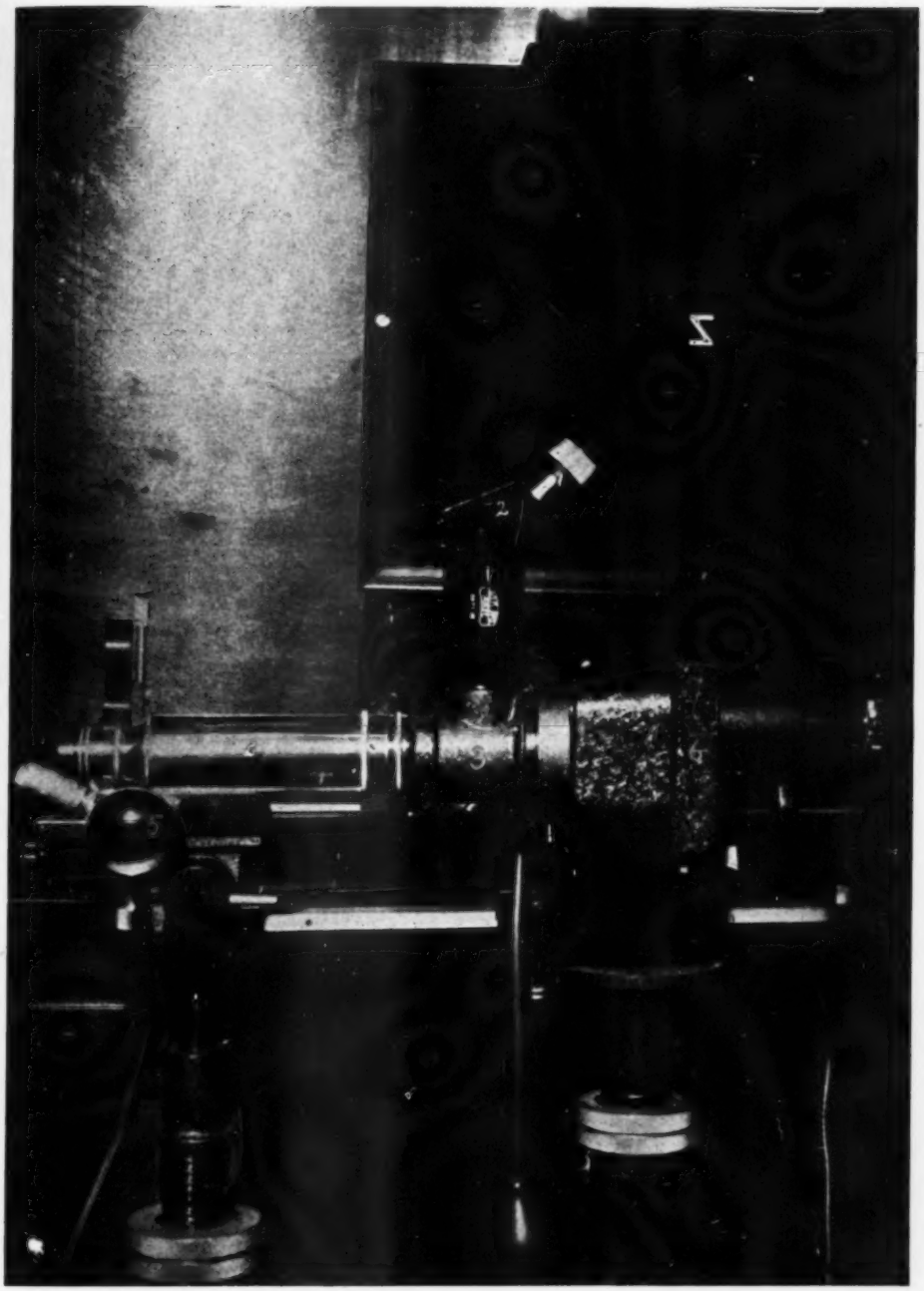

Fig. 5. (Redway) Side view of microscope and camera. 1, view finder. 2, prism. 3, prism housing. 4, barrel of microscope. 5, coarse adjustment rack and pinion. 6, camera.

affords a means whereby the observer may check the focus of the instrument up to and during the moment of exposure. In order that the microscope may be focused and the plate remain unexposed, a shutter is interposed between the plate and the prism.

Figure 5 is a lateral view of the microscope and camera. It will here be noticed that, by means of a rack and pinion, adjustment of the microscope may be made with respect to its support. This is necessary because of the varying focal lengths of the objective used. Differing from the usual practice of slit-lamp microscopy, the upper rack and pinion or fine adjustment is used merely to adjust the microscope to an approximate focus; after this it is not touched.

Figure 6 shows adaptation of the usual slit-lamp illuminating system to photographic uses. A small and compact arc lamp operating at ten amperes has been substituted for the usual pointolite tungsten enclosed arc, and a nine inch square sheet iron light shield placed in front of it, because owing to the high temperature of the arc, more ventilation than usual is necessary and the aberrant light is apt to be annoying.

The commercially furnished draw tube which holds the condensing system of lenses has been lengthened to ten inches so that the light excluding tube which rests on the horizontal bed of the bench may be slid along it to any desired position. This movable tube has on its front end a square chamber in which, as may be seen in the illustration, an ordinary photographic shutter has been mounted. This shutter may be operated as in figure 4 by an electromagnetic release, or as in figure 6 by a small bulb. In the first instance, the contact which operates the electromagnet is made when the shutter on the camera is opened.

The aperture of the light shutter may be adjusted to any desired size from pinhole to full aperture, and its speed varied from three seconds to 1/150 second. At the front end of the bench are two lenses of seventy and of one hundred mm. focus respectively, and in the lens cell immediately behind the shutter is mounted a lens of seven diopters. In the front end of the shutter housing is mounted a slot in which the ordinary gelatine light filters may be inserted when cut to size. Two of these are shown in figure 7 at the left of the table.

Immediately in front of the first condenser lens and slightly below it is mounted a small pilot light. This pilot is pivoted on a ball and socket joint so that it may be moved in any direction. It contains a four-volt flashlight lamp, and the outer sleeve which contains a spherical condenser is movable, so that a diffuse or a concentrated beam is obtainable. This is very necessary as, during the focusing of the apparatus, it may be necessary to illuminate clearly some structure which cannot be sharply focused by diffuse light. In order that the illumination from the pilot light shall not register on the plate during the exposure, a small disk of gelatine filter is placed just inside the condensing lens: the Wratten A having a factor of nine is suitable.

Figure 7 shows the instrument board containing three meters. The first one, that nearest the base of the apparatus, is a voltmeter and is connected across the six volt current derived from a rheostat in the house 110 volt D.C. circuit. This resistance is variable, enabling the operator to increase or decrease the intensity of the pilot at will. As it is not always convenient to look up while focusing the microscope, the intensity of the pilot may be directly read from the meter. In practice it is well to determine experimentally the intensity of the pilot which will just register on the plate during a given exposure, and to adjust the voltage so that it is always under this value.

The two other meters are a voltmeter reading 0-150, and an ammeter reading 0-30. The voltmeter is connected across the 110 D.C. house circuit on the line from which the current for the arc is taken, and the ammeter is in series with the arc. The purpose of these meters is to keep an accurate check on the arc, which is not automatic and which, operating at ten am-

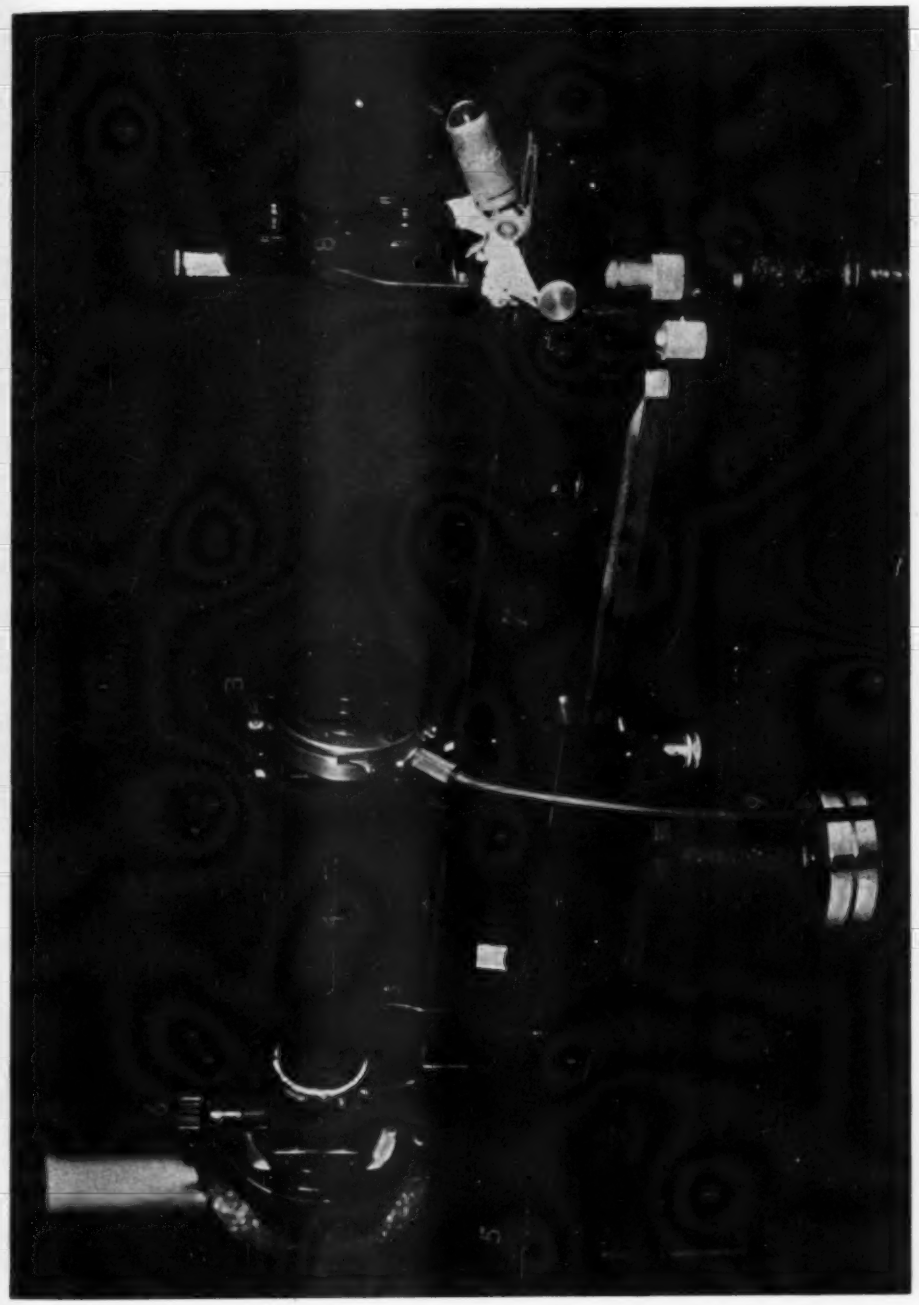

Fig. 6. (Redway) Illuminating apparatus. 1, pilot light. 2, filter holder and diaphragm. 3, shutter. 4, light-excluding sleeve. 5, light-baffle plate. 6, arc-centering screw. 7, bed. 8, front condensers. 9, pneumatic shutter-release.

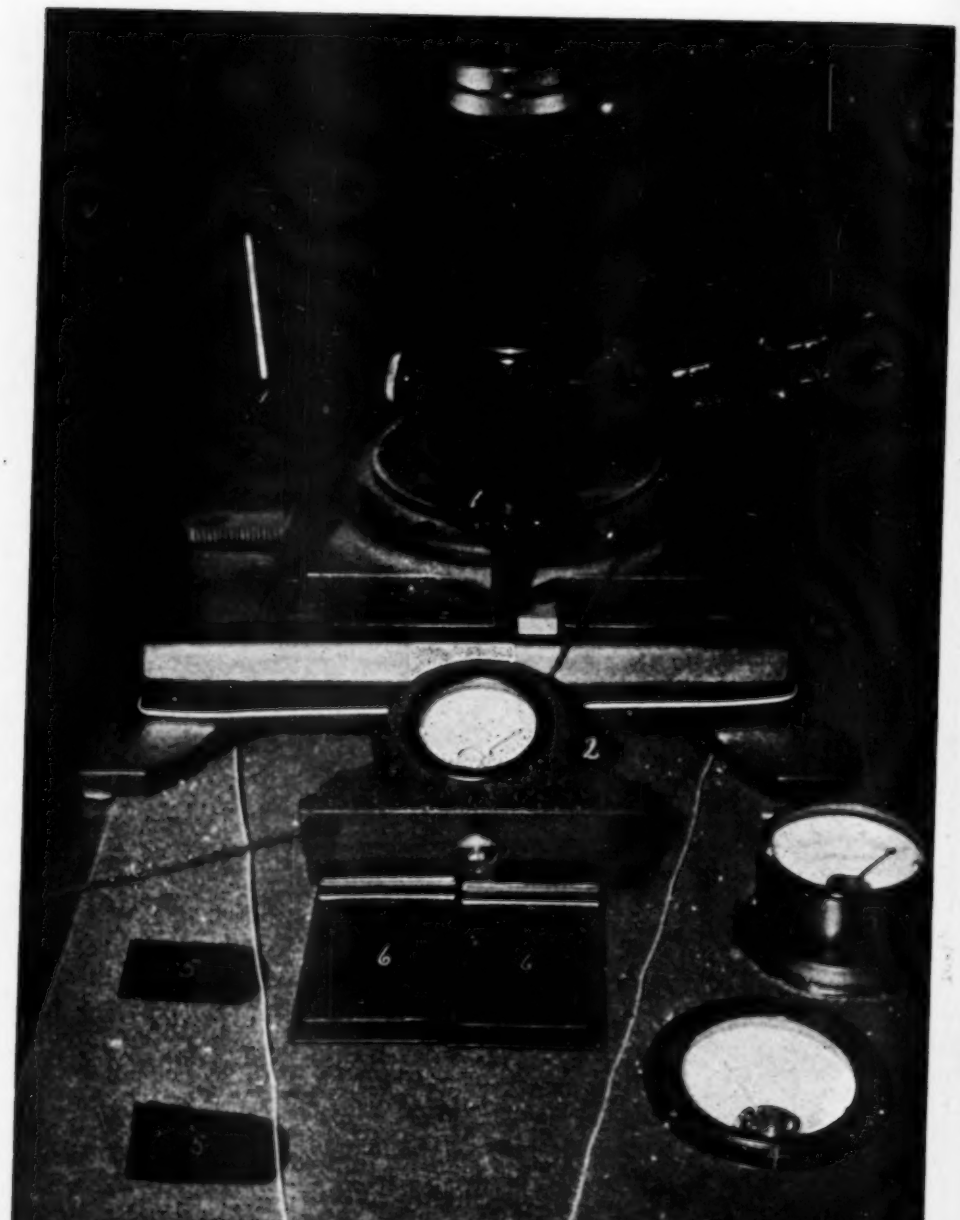


Fig. 7. (Redway) Controls. 1, rack and pinion front and lateral shift gears. 2, voltmeter indicating pilot light intensity. 3, ammeter in series with arc. 4, voltmeter across arc circuit. 5, gelatine light filters cut to fit slot shown at 2 in figure 3. 6, plate holders.

peres, changes its gap quickly. In series also with the arc is a variable resistance which may be altered at will, but which is subject to considerable variation at any setting as the temperature of the resistance wire rises. All these variables may be accurately checked by these two meters, and the operator will be able with a little experience to operate the arc without looking at it and at the same time assure himself of standard conditions of illumination.

To those used to working with a tungsten filament light the precautions here taken may seem a little superfluous, and perhaps they are, but the author finds that the more accurately the conditions governing the illumination can be regulated the more likely the results are to be good. It is perhaps well to point out here the often overlooked fact that the spectral characteristics of the arc change rapidly under varying conditions of operation, and that this must be taken into account.

Any good make of panchromatic plate may be used, but certain physical characteristics of the emulsions must be taken into account. For instance, in general the higher the speed of the plate, the larger the silver grains and vice versa. The author uses a standard English plate which he has found very reliable as to speed and uniformity of emulsion. The plates are double coated, 4.5 by 6 cm., and not noticeably subject to halation even without backing. But there is no good reason why films should not be used. It is argued that these are usually freer from pin holes than are plates.

It must be remembered that in all low power photomicrographs the corneal light reflex will be encountered, and must be so placed that it will not interfere with any important structures. Placement of this reflex at the pupillary margin of the iris will usually give an even illumination of the iris and a perfectly black pupil. If the reflex falls within the pupillary area, it will render this relatively luminous and a smaller secondary reflex from the lens will be encountered, ordinarily showing as a small grayish dot. In order to calculate with some exactness the placement of these reflexes, and to center the light beam in the horizontal plane with the microscope, the author uses an artificial eye mounted by a clamp on the head rest. The proper microscope objective is screwed into place, the shutter on the light arm is opened and the diaphragm set to pinhole. The arc is started, and by means of its beam the microscope is placed in focus on the iris of the test eye. The apparatus is then moved from side to side until the eye is centered horizontally in the objective. Vertical centering is accomplished by the knurled screws shown in figure 4. The angle of the light beam to the optical axis of the microscope is then set to the most advantageous angle and the position of the light reflex in relation to the cornea and iris observed: in general the relations obtaining in the test eye will obtain in the living subject unless there be marked distortion of the corneal surfaces.

The convenience of the condensing system previously described is that by moving the whole bench away from or nearer to the subject, either convergent, parallel or divergent rays may be had and, by adjusting the aperture of the iris diaphragm, the bundle of rays may be varied from a thin pencil to a thick one. In general the narrower the pencil of light, the smaller the corneal reflex will be.

After the apparatus is set properly, binding nuts are firmly clamped and the adjustment is not subsequently disturbed until after the picture is taken. The point of this is that, at all times when the microscope is in sharp focus, the light will always be correctly placed and centered. If when the patient is placed in the head rest it is necessary to move the camera, this is done by using the rack and pinion gears on the base. Raising or lowering the patient's head is accomplished by raising or lowering the head rest. Thus the patient is centered on the microscope, and not the microscope on the patient. The small pilot light is then turned on and its rays directed to illuminate the

desired field. The shutter on the light arm is now set to the desired time interval and the patient directed to fix on whatever object brings his iris in a plane at ninety degrees to the optical axis of the microscope. The shutter is released and the picture taken. Considering the intensity of the light, it is remarkable that only an occasional patient will observe the subsequent scotoma.

The length of exposure must not exceed 1/25 second for reasons already outlined, except that when the pupil has been dilated with atropin and the iris light-reflex eliminated, or when the iris is otherwise fixed as by adhesions or in tabes, the interval may if necessary be lengthened. It may be shortened if much sclera is to appear in the picture or if corneal opacities are present. For this reason, a continuously variable time shutter such as the volute is utilized for best results.

Filters are used when it is desired to produce special contrasts. For example, consider the pigmented pupillary margin of the iris. This is adjacent on the one hand to the perfectly black pupil, and on the other hand to the highly reflecting surface of the iris. The pigment is so greatly light-absorbing that under ordinary circumstances it will either merge into the black of the pupil actually, or apparently by contrast with the light surface of the iris. If now a proper filter is used, the light reflected from the iris surface can be restrained and the small amount of light reflected by the pigment be allowed to act on the plate so that it will appear in the negative as a half tone while yet the larger surface of the iris is not over exposed. In this instance the proper filter is one which permits the pigment to be photographed about one-fourth in the absorption band. There is no single rule to be applied relating to the use of filters except that in general, to photograph an object and to have it appear as black as possible, it is necessary to photograph it as nearly as possible within the absorption band. This presupposes known spectroscopic characteristics of the various pigments and structures under consideration. But it is not always possible to evaluate these correctly, since spectroscopic analyses of the structures of the living eye have not been made available. It is the expectation of the author that further work in photomicroscopy with the use of filters of known characteristics may in the end afford some useful data on the physiology and the pathologic physiology of the living human eye.

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## Bibliography

Aërial haze and its effect on photography from the air. Monograph no. 4, Eastman Kodak Co.
Anderson, J. A. Jour. of Astrophysics, 1920, v. 51, p. 37.
Benedicks, C., and Waldow, E. Jour. Royal Microscopical Soc., London, part 4, p. 183.
Bovie, W. T., and Barr, C. Jour. Amer. Opt. Soc., v. 7, p. 1167.
Burka, S. M. Jour. Franklin Inst., 1920, v. 189, p. 25.
Chemical Abstracts, 1922, v. 16, p. 529.
Groesbeck, Harry A. Process and practice of photoengraving. 1924, Doubleday, Page and Co.
Journal Industrial and Engineering Chemistry, 1920, v. 12, p. 890.
Journal of Photography, 1909, v. 33, p. 200.
Karrer, E., and Smith, U. M. Jour. Amer. Opt. Soc., v. 7, p. 1121.
Mees, C. E. K. Fundamentals of photography, Eastman Kodak Co.
Nietz, A. H. Theory of development. Monograph no. 2, L. Van Nostrand Co.
Photography of colored objects, Eastman Kodak Co., 1926.
Porter, A. W. Jour. Royal Microscopical Soc., London, 1920, part 4, p. 67.
Redway, L. D. Internat. Jour. Med. and Surg., 1927, v. 40, no. 9, p. 361.
Suyehiro, Kyoji. Japanese Jour. of Physics, 1923, v. 1, p. 97.
Wratten light filters, Eastman Kodak Co., 1925.

# TENDON TRANSPLANTATION FOR PARALYSIS OF EXTERNAL RECTUS: REPORT OF CASE

FRANK H. RODIN, M.D., AND WILBER F. SWETT, M.D.

SAN FRANCISCO

In a case of paralysis of the external rectus in a man of sixty-one years, which had followed an injury thirty years previously, the lateral halves of the vertical recti muscles were transplanted to the external rectus at its insertion. This gave partial correction, and tenotomy of the internal rectus nine weeks later rendered the result entirely satisfactory.
From the Division of Ophthalmology, Stanford University Medical School.

The transplanting of a tendon of an eye muscle upon another muscle for the correction of paralysis is of recent origin. Jackson[1] in 1903 reported the first successful transplantation of one ocular muscle to assume the function of another, his operation consisting of transplantation of the superior rectus to a new insertion away from its normal position, in two cases of paresis of the superior oblique. The first successful operation in transplanting parts of the inferior and superior recti muscles into the external rectus was reported by Hummelsheim[2], in a case of congenital paralysis of the right external rectus. Since then a number of successful cases of correction of paralysis of the external rectus muscle by tendon transplantation have been reported.

The following case is reported because of some interesting operative features:

**Case:** History: O. H., male, aged 61 years, was first seen December 9, 1927. Thirty years previously, he had been struck on the left eye by a piece of wood. Later a cataract developed, for which he was operated. Fifteen years later, the left eye began to turn inward, and in a short time the eye was completely adducted. He was unable to see with this eye, but wished to have it straightened for cosmetic reasons.

Examination: The vision was: right eye, 15/20; left, fingers at eight feet. Examination of the left eye showed (fig. 1) an internal strabismus of forty-five degrees, as measured by the perimeter arc. There was no abduction of the eye beyond the primary position. The cornea showed a small peripheral opacity. There was a coloboma in the lower nasal quadrant of the iris, probably due to an optical iridectomy. The remaining portion of the iris was attached, in the pupillary area, to what appeared to be lens capsule and débris.

Fig. 1. (Rodin and Swett) The eyes in primary position. There was total absence of abduction of the left eye.

Operation: Under local anesthesia, a curved incision was made through the conjunctiva from the insertion of the superior rectus, extending over the external, and terminating at the insertion of the inferior rectus. The underlying tissues were separated and the three muscles exposed. The superior rectus was split for about twelve mm. The lateral half was separated from its insertion and stitched to the upper part of the insertion of the external rectus, using 00 chromic catgut. The inferior rectus was similarly treated, but in doing so the lateral part was torn from the belly of the muscle. The torn end was reunited to the belly of the inferior rectus and the distal end stitched to the lower part of the insertion of the ex-

ternal rectus. The conjunctival wound was closed, using black silk. The patient made an uneventful recovery, and was discharged from the hospital ten days after the operation.

Nine weeks later, the internal strabismus was still present, but was reduced to thirty-five degrees. The patient was able to abduct his left eye about half way between the primary position and extreme abduction. A complete tenotomy of the left internal rectus was done. A supporting suture was placed in the bulbar conjunctiva at the temporal side of the eye, passed through the external canthus out to the skin, and tied over a small piece of gauze. This supporting suture was removed thirty-six hours later.

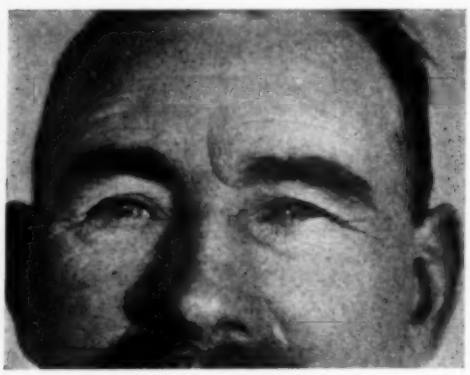

Fig. 2. (Rodin and Swett) The eyes in primary position, ten days after the second operation.

Five days later the eyes were straight and the patient was able to move his left eye in all directions. Photographs for figures 2 and 3 were taken ten days after the second operation.

**Comment:** The transplanting of the tendons without tenotomy of the internal rectus was done because it was desired to observe the effect of transplantation. Only a partial correction was obtained. This is similar to the experience of Sweet[3], who operated on a girl aged seventeen years for the relief of a paralysis of the external rectus muscle which had existed from childhood, and was probably congenital. He exposed the external halves of the superior and inferior recti muscles, with the overlying Tenon's capsule, and cut them off close to the sclera, firmly securing them by separate sutures. Instead of joining the tendons

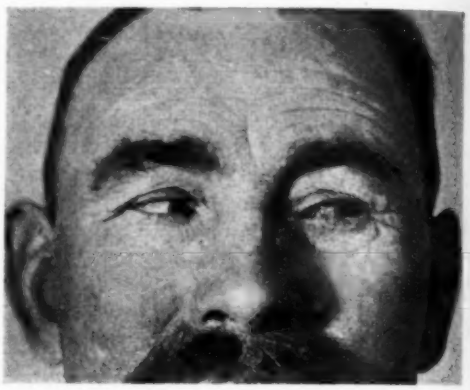

Fig. 3. (Rodin and Swett) The eyes when looking to the left, ten days after the second operation. The patient is able to abduct his left eye to the extreme left.

of the superior and inferior recti to separated strands of the external, as suggested by O'Connor[4], the external rectus was completely severed from the globe, after the usual threads for advancement had been inserted. The severed tendon of the superior rectus was then sutured to the upper portion of the stump of the external rectus remaining on the eyeball, and the inferior to the lower portion. The external rectus was then advanced in the usual way, somewhat covering the new points of attachment of the transplanted vertical recti. The internal rectus was not cut. Prior to the operation in Sweet's case the convergence of the eye was about thirty degrees, with no power of outward rotation. At the end of ten days the patient was able to turn the eye outward twenty degrees. A tenotomy of the internal rectus was then done. At the end of six weeks the effect was a power of outward rotation of thirty-five degrees, as measured on the perimeter.

It is of interest to note that in the case now reported the tearing off of the lateral half of the inferior rectus

and reuniting it had no effect on the final result of the operation.

### Summary

1. A case is presented of paralysis of the external rectus of the left eye of a man aged 61 years, which had followed an injury thirty years previously.

2. Transplanting the lateral halves of the inferior and superior recti muscles to the external rectus at its insertion gave a partial correction.

3. A complete tenotomy of the internal rectus was performed nine weeks later. There was correction of the internal strabismus and the patient was able to abduct the eye to the extreme left.

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### References

[1] Jackson, E. Operation on the tendon of the superior rectus muscle for paresis of the superior oblique. Ophth. Rev., 1903, v. 22, March, p. 61.

[2] Hummelsheim, E. Über Sehnentransplantation am Augen. Trans. 34th Ophth. Cong. Heidelberg, 1907, p. 248; Weitere Erfahrungen mit partieller Sehnenüberpflanzung an den Augenmuskeln, Arch. f. Augenh., 1909, v. 62, p. 71.

[3] Sweet, W. M. Tendon transplantation in paralysis of the external rectus, Amer. Jour. Ophth., 1921, v. 4, Nov., p. 866.

[4] O'Connor, R. Transplantation of portions of vertical recti for abducens paralysis, with successful result, Amer. Jour. Ophth., 1919, v. 2, March, p. 197.

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## A CONSIDERATION OF INTRAOCULAR FOREIGN BODIES

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SAINT LOUIS

The author discusses the general management of foreign body cases, and the best methods for dealing with the special situations which arise in individual patients. The questions considered include: (1) whether immediate removal is always advisable, (2) whether extraction sooner or later is invariably necessary, (3) the extraction of non-magnetic fragments, and (4) the early care of traumatic cataract. Illustrative cases are given. Read before the Saint Louis Ophthalmic Society, January 27, 1928.

It is with some degree of hesitancy that I bring before you a subject which is commonplace. But for the very reason that it does not deal with the rare or unusual it comes within the experience and ken of everyone present and provides a common ground for discussion. In this industrial age it is surprising that penetrating wounds of the eye with retained foreign bodies are not more common. The lack of caution despite all warnings and the disinclination of workmen to use protective goggles explains to some extent the present frequency of such injuries. The variety of objects which may be found intraocularly is legion, ranging from iron and steel which are the commonest and fortunately the easiest of extraction to such rare articles as fibers of silk or cotton, particles of leather, thorns, and even pieces of finger nail.

The size of the majority of foreign bodies is small but occasionally a relatively enormous one is met with. The longest piece I have removed was a sliver from a drill and measured thirteen-sixteenths of an inch in length. Needles to say the eye was totally disorganized and was enucleated. The metal trades and handlers of metal furnish the majority of cases. Explosions premature and otherwise provide many of the cases of copper, stone, and glass. Each year furnishes its quota of gunshot injuries.

It is not my purpose to analyze the various foreign objects or to discuss the special means of their removal. A discussion of the general management of foreign body cases and a consideration of the best method of attacking a given situation seems more apropos.

Foreign bodies in the orbit will not be considered except to remark in passing that the orbit is very tolerant of them and little interference with the mobility of the eye is met with.

Ophthalmologists are divided in their opinions as to whether it is bet-

ter to remove a foreign body through the original wound of entry or through an operative wound. It seems to me that the accessibility of the object and its nature should determine our procedure. The measure or measures which will produce the least trauma should be given preference. To adhere strictly to the use of a giant magnet, for example, and draw a foreign body around the lens with possible injury to that structure and to the iris may not be good surgery. It seems logical to suppose that shorter and more direct pull with an even steady movement of the foreign body, would be the best. In a recent injury the foreign body if of considerable size comes with a rush, endangering all tissues with which it comes in contact. I remember one case seen with Dr. Alt, in which the steel came from the eye with such force as to carry with it the entire iris, producing a traumatic aniridia. A Sweet magnet was used in this instance.

An added danger in the use of a giant magnet attracting metal through the original wound of entry, or even through an operative wound, is that the powerful and sudden jerk given the foreign body may detach the retina. This danger is greater in older cases in which plastic exudates have had an opportunity to form. Haab maintains that the majority of foreign bodies may be drawn around the lens and into the anterior chamber, due to the fact that the bodies in general are shaped like a cucumber seed and readily slide around the lens and through the pupil.

Removal through the sclera save in exceptional cases is advised against by Haab. But in looking over the literature I was impressed by the number of successful removals through a scleral incision with preservation of good vision. It should be borne in mind, however, that the successes are very likely to be reported and the failures are probably unrecorded. As a general working rule, foreign bodies in the anterior portion of the eye may be extracted through the original portal of entry or through a supplemental corneal incision. This latter may be necessary for objects of a nonmagnetizable nature and may be preferred for magnetizable bodies, to lessen traumatism and obviate the necessity of enlarging the original wound, especially one in or near the center of the cornea.

Usually foreign bodies are removed as soon as possible after injury, supposedly to lessen the likelihood of infection. In special instances it may be unwise to attempt removal of a foreign body. This applies particularly to nonmagnetizable bodies in the posterior part of the eye and to both magnetizable and nonmagnetizable ones deeply embedded in the lens.

The length of time a foreign body may be present without causing symptoms may be years. The case of a sliver of iron embedded in the iris and tolerated without symptoms for twenty-seven years has been recorded by Reitsch.[3] Iron or steel if encapsulated will probably produce no siderosis but be tolerated for many years. Wheeler[4] reported an instance in which the foreign body was retained for fifteen years with no inflammatory disturbance, and with vision of 20/20. Franklin and Cordes described a case in which a piece of copper three mm. square had remained in the eye for forty-six years. Severe inflammation then occurred with sympathetic irritation of the other eye, which ceased upon enucleation.

Bulson[4] takes exception to the dictum of immediate removal of foreign bodies within the posterior segment of the eye in all cases. Numerous instances are given of particles retained within the globe for many years, some with good vision and all without inflammatory symptoms. He makes a strong plea for conservatism and deprecates the speed with which many eyes are enucleated upon failure to remove the foreign body. He pertinently remarks that even in the successful extractions an equally good result might have occurred had no operation been done, and that in those in which the foreign body was retained for a long time before a reaction appeared the patient had the benefit of more or less vision and the presence of an eye-

ball, one or both of which might have been lost had an early extraction been attempted or accomplished.

This latter speculation bears with greater force on nonmagnetizable than upon magnetizable bodies. The trauma and manipulation in removing or attempts at removal of nonmagnetizable bodies is such as to ruin the eye for vision in many instances if not to compel its early enucleation. A number of authorities have pointed out that instances of quiescent foreign body should not be criteria in our management of foreign body cases, for the reason that no one knows what foreign body is going to prove inactive, or if quiet how long it is going to remain so. We are actuated in our zeal for extraction by the fear of sympathetic ophthalmia and justly so. Bulson however questions whether removal lessens the danger of sympathetic ophthalmia. He feels that if this is going to occur it will do so whether a foreign body is present or has been removed.

Cridland[5] gave a report of seventy-six foreign body cases, in forty-three of which the eye was saved and in thirty-three enucleated. It was interesting to note that the more anterior the foreign body the greater the percentage of saved eyes. Of the twelve cases in which the foreign body was in the lens, in ten the eye was saved. In all of the lens cases the foreign body was allowed to remain until the cataract was mature. It may at times be unwise to allow an object to remain in the lens until the cataract is ripe, as the foreign body may be scraped off and lost during lens extraction. This is not such a calamity if the object is magnetizable and preparations have been made to have a magnet instantly available. A foreign body entering the lens does not always cause cataract and it may be best to remove it at once if superficially embedded. Shahan[6] reported such a case with 20/15 vision eight months after removal, vision before removal having been direction of hand movements at eight feet. In Wibaut's case a sliver of iron passed through the cornea and lens into the vitreous and was removed through a scleral incision. This was followed by increasing lens cloudiness. In the course of a few months vision improved with clearing of the lens. At the end of six months vision was six-tenths with correction. As the patient was forty-one years of age this spontaneous clearing of the lens was considered remarkable.

Unless a foreign body is visible to the observer's eye with or without an ophthalmoscope it is unwise to apply a magnet as a test before an x-ray localization has been made. I was greatly interested and surprised to see one of the most noted European ophthalmologists abandon the effort to extract steel in two intraocular foreign body cases in neither of which an x-ray examination had been made.

Emphasis has been laid on the importance of early diagnosis in intraocular foreign bodies and the necessity of a guarded prognosis in all cases. The final results as to vision or even retention of the eyeball are often far from the best. This is particularly true if cases are followed for a number of years after the injury. The amount of damage done to an eye by a foreign body depends on a number of factors, viz. (1) the size of the object, (2) its character or nature, (3) whether it is sterile or not, (4) the tissues penetrated and its situation in the eye, and (5) the speed with which it strikes the eye. A small foreign body if projected with sufficient velocity can do a great deal of damage.

It calls for rare judgment to decide what to do in the way of secondary operations after the extraction of an intraocular foreign body. In a fresh case it is necessary of course to excise prolapsed iris if present. What should be done with the lens if injured? Unless the lens is swollen and liable to cause secondary glaucoma it is best to let it alone. One is at a great disadvantage in operating for removal of the lens some days or weeks after a magnet extraction has been done, and when the eye is at the height of its reaction from the injury. If the wound of entry is large and favorably situated it may be the better part of judgment to do the equivalent of a linear extraction and lavage of the anterior cham-

ber at the first sitting. I did this in the case of a penetrating glass injury with the glass in the lens. The post-operative reaction was remarkably slight, the eye being saved the necessity of handling a large amount of swollen lens material which acts of itself like a foreign body. A number of case reports follow:

**Case 1:** N.F., aged seventeen years, high school girl, was sent to me from Hannibal, Missouri, November 29, 1921. She was seen at eight p.m. and immediately taken to St. John's hospital. While she was heating calcium chloride in a glass tube the day before, the tube exploded and something flew into the left eye. There had been some bleeding at the time but no severe pain. She did not sleep well the night following the accident. No foreign body was removed from the eye and no x-ray picture was made in Hannibal. She said she could see only shadows with the eye. Examination revealed a cut extending two mm. into the sclera at six o'clock and thence upward in the cornea toward two o'clock. The total length of the cut was a centimeter. Prolapse of iris was present. R.V. 20/15, L.V. fingers at 3 inches. A loupe revealed a piece of glass lying in the lens and impinging on the outer coloboma of the iris. The anterior chamber was shallow, lens cataractous, globe soft. Injection of the eye was not great. Patient not in pain and no evidence of infection. Operation at 9:30 p.m. under local anesthesia using cocaine subconjunctivally. An iridectomy was done. Forceps were introduced within the eye and the glass particle removed. Some swollen lens material was expressed and some cleared out by lavage. Wound cleansed. The conjunctiva at the lower half of the limbus was separated and loosened and drawn up over the corneal wound, being secured by three stitches. Recovery uneventful. Final vision with plus 10.00 sph. 7/60. When last seen in 1924 eye was quiet and the wound inconspicuous.

**Case 2:** This case illustrates the fact that a good result may be obtained with a foreign body in the ciliary region. To add to the difficulties, the injury was to the patient's good eye, the other eye being amblyopic. J.C.F., aged 34 years, was seen by me September 12, 1924, with a history that he had been struck in the left eye two days previously, by a small metal fragment. X-ray pictures made at Cape Girardeau showed an intraocular foreign body, but no localization was made. The eye was red, painful, pupil filled with exudate, hypopyon, iritis. The pupil was fairly well dilated. There was a somewhat soggy looking wound in the cornea near the lower limbus and slightly to the temporal side. Patient had been having severe pain from the iritis. Vision so poor that he had to be led.

A localization was ordered and the patient put in the hospital. At five p.m. the same day a scleral incision was made in the ciliary region at the site of the foreign body as indicated by the localization, which was most accurate. The foreign body was located five mm. above center, nine mm. to the temporal side, and six mm. behind the center of the cornea. There was no loss of vitreous. The conjunctiva was closed with three stitches. The foreign body was obtained on the second attempt, as at the first attempt the foreign body was lying across the incision.

Recovery uneventful. September 19, eye whitening, opacity in pupil either exudate or thin flat lens opacity. September 25, O.D. V. 1/20, O.S. V. 1/10. No view of fundus. Central thin, flat anterior lens opacity. October 4, eye better, tension minus. October 27, O. S. V. with +2.00 sph. 6/13, vitreous, clearing. November 10, O.S. V. with +2.00 sph. 6/10, vitreous clearer. November 17, O.S. V. with glass 6/8 partly. Since return of sight there was paresis of accommodation. December 27 O.S. V. with glass 6/6. Read print best with +1.00 sph. added. Vision eventually equalled 6/5 with +1.00 sph. He has been at work for over two years with no trouble or decrease of vision. Vitreous floaters disappeared and the lens cleared completely. When last seen several months ago the eye was apparently normal.

**Case 3:** The following case demon-

strates the value of waiting in the presence of a foreign body deeply embedded in the lens. T. F., aged thirty years, was seen for the first time January 10, 1924. He had had divergent squint since childhood. O.D. amblyopic, fixes with O.S. and uses left eye for all purposes. Seven weeks before consulting me he was struck in the left eye by a fragment of steel. He thought it was a glancing blow. O.S. was red and very painful for two or three days, then began to improve. Twelve days before coming to me he noticed a "fog in the vision" which grew gradually worse. At the time of the injury he was seen by an oculist in his home town, and he was treated until he came to Saint Louis. No x-ray picture had been made. There was no pain or redness when I saw him, but vision had decreased to 6/20 partly. O.D. V. fingers at two feet.

Inspection showed a small central corneal scar and a spot in the lens a little to the temporal side; no hole in the iris. A piece of steel was made out in the lens, which was rapidly becoming opaque. O.D. with —13.00 sph. V. = 6/40. The patient could get about with this and it was ordered to be used as the sight in the injured failed. He was sent home with orders to report every two weeks for observation. The middle of March, 1924, the cataract was deemed ripe enough for operation. March 21, 1924, combined extraction done at Deaconess hospital. The lens came out nicely and with it the embedded steel. Recovery was uneventful. April 3, O.S. V. with +10.00 sph. 6/13. April 11, O.S. V. with +10.00 sph. and +0.75 cy. ax. 75°, 6/6 partly. Fundus negative, media clear. Vision with correction later reached 6/4 partly. Was able to read the finest type with +3.00 sph. added, which correction he has been using for several years.

**Case 4:** The history that follows vividly illustrates how a foreign body may enter the eye and be carried for an unknown time with the patient totally unaware of any accident. C. S., aged 26 years, consulted me September 14, 1925, with the statement that his trouble had started in the left eye seven or eight months before. The first symptom noticed was that the pupil of O.S. was larger than that of O.D. He thinks he could see well at that time but that sight since then has gradually failed. He had been going to Dr. X for the past four months. A blood test made and was negative. The eye was white up to two days before consulting me and before this he had had no pain. After the onset of the redness there was slight pain.

Four months before, at the time he consulted Dr. X, the iris began to change color. When first seen by me O.D. was blue and O.S. was a greenish brown. Tension to finger O.S. was subnormal. There were large yellowish brown dots on the anterior lens capsule. These differed from the pigment deposits after an iritis. There was no history or memory of any injury to the eye, although up to a year and a half preceding September, 1925, he had worked for a steel company doing punch press work. Vision O.D. = 6/5, V. O.S. = 0. No scar of cornea or iris made out. Appearance suggested an intraocular foreign body.

September 15, 1925, x-ray localization by Dr. Ernst showed a foreign body five mm. below, eight mm. to temporal side, and fifteen mm. back of the center of the cornea. September 17 scleral incision, after laying back a flap of conjunctiva, and attempted repeatedly to get the foreign body but failed. September 21 enucleated eye, because of uveitis, siderosis, blind eye, and possibility of sympathetic ophthalmia. Eye sectioned and examined by Dr. H. D. Lamb.

**Case 5:** This case was peculiar in that a piece of rock cut through the cornea as cleanly as a sliver of steel. F. E., aged 36 years, was seen November 12, 1926, at three p.m. At 11:30 a.m. the same day, while chipping rock, he was struck in the right eye with a small piece. The eye was slightly reddened and there was a cut at the limbus a little to the nasal side of the ninety degree meridian. Lying on the iris to the temporal side opposite the limbus at the eight o'clock situation, there was an irregular quadrilateral fragment of rock. The eye was cleansed

and operation performed under cocaine anesthesia. As the foreign body could not well be reached and manipulated through the wound of entry, an incision with a Graefe knife was made at the limbus opposite the foreign body. Some difficulty was encountered in manipulating it so that it could be grasped with forceps, but when this was finally accomplished the stone was easily removed. There was no iris prolapse, and under antiseptic treatment both wounds healed promptly. December 4, cornea clear, slight iritis, pupil round, no distortion, no lens changes. Vision under atropine without glass 6/25, O.S. V. 6/4. Patient left for his home and I saw him no more.

## Conclusions

My own convictions in the matter of intraocular foreign bodies may be of limited value, but are here recorded nevertheless. I realize that a very large and varied experience in industrial work is necessary in developing the keenest judgment, and this experience I have not had.

(1) Foreign bodies in or on the iris or in the anterior chamber should be removed as soon as possible after the injury. If magnetizable, a small magnet should be used and the foreign body extracted with as little manipulation and trauma as possible. As each case is a law unto itself a supplementary operative opening may or may not be indicated.

(2) Foreign bodies superficially embedded in the lens should be extracted at once if magnetizable. If nonmagnetic it is questionable if they should be manipulated. Particles deeply embedded in the lens, whether magnetizable or not, should be let alone until the ensuing cataract is ripe, when both lens and foreign body may be removed at one operation.

(3) The demonstration of a magnetizable body by eliciting pain from a pull by a magnet should be discountenanced except in those cases in which an x-ray picture cannot be obtained. In the present day this must be quite exceptional. Foreign bodies in the anterior segment of the eye which can be seen do not require a roentgenogram but, as a second or even a third foreign body may be present, it is best in all cases to have an x-ray picture made.

(4) Excessive zeal should not be manifested in endeavoring to extract nonmagnetizable bodies in the posterior segment of the eye. Too much manipulation is required and too much trauma occasioned. The aim is to save the eye and not merely to recover a foreign body. If infection has been carried into the eye removal of the foreign body will not eliminate the infection.

(5) A scleral incision is frequently the best approach to a foreign body, accurate localization being the guide.

(6) An enucleation is seldom called for at once. The eye should be given a chance.

(7) As a general rule the lens is to be let alone unless swelling is so great as to cause secondary glaucoma.

(8) A giant magnet is indispensable, but should be used in selected cases and not as a routine. Its greatest value is in the extraction of very small foreign bodies.

(9) One need not fear to make an incision in the ciliary region to gain access to a fragment buried in the ciliary body. If sympathetic ophthalmia develops it cannot be charged to the incision, but to the original injury.

(10) The prognosis in any case is guarded. Eventually the most promising cases may prove failures and enucleation be required. An apparently hopeless case may quiet down and some vision be retained or at least the eyeball be saved.

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## References

[1] Reitsch. Klin. M. f. Augenh., v. 53, p. 545.
[2] Wheeler. Arch. of Ophth., v. 45, p. 373.
[3] Bulson. Trans. Sec. on Ophth., Amer. Med. Assoc., 1926, p. 285.
[4] Franklin and Cordes. Amer. Jour. Ophth., 1922, v. 5, p. 533.
[5] Cridland. Ophthalmoscope, v. 14, p. 406.
[6] Shahan. Amer. Jour. Ophth., v. 33, series 2, p. 138.

# PAPILLEDEMA IN ACUTE LUETIC MENINGITIS AND MENINGOENCEPHALITIS

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In seven cases studied in the departments of neurology and ophthalmology of the University of Michigan Medical School, and in which there was an unquestioned diagnosis of acute luetic meningitis or meningoencephalitis, severe fundus lesions were prominent clinical signs. The presence of this complication is likely to confuse the diagnosis, so that complete serological studies are essential in acute nervous diseases accompanied by choked disc.

Papilledema or neuroretinitis occurring in association with acute luetic meningitis or meningoencephalitis has failed, we believe, to draw adequate comment from writers on this particular phase of neurosyphilis. Its presence in the disease, however, is sufficiently frequent—and confusing as to diagnosis—to justify calling attention to it as an outstanding sign.

In seven cases that we have no hesitancy in classifying as acute luetic meningitis or meningoencephalitis, comprising all the cases of this condition admitted to the neurological service of the hospital of the University of Michigan since 1925, severe fundus lesions were prominent clinical signs.

We wish to report these cases in full, later discussing the significance of the ocular findings in the differential diagnosis.

**Case 1:** S. M., 36 years, female, admitted June 23, 1925. Present illness of three months duration. Complaints: headaches, vomiting, urinary retention. No history of syphilis. Examination: pupils react to light, weakness of the right fifth, both sixth, and left seventh nerves, knee and ankle jerks not obtained, no stiffness of the neck, no Kernig. Fundus: choked disc O. U., swelling O. D. 3 D., O. S. 2 D. Blood Wassermann four plus. Cerebrospinal fluid (June 26, 1925): 138 lymphocytes, Pandy three plus, Wassermann four plus, gold solution curve 24433321000, mastic solution curve 443330. Temperature varied between 98.4 and 99.4°. Treatment: spinal drainage, potassium iodide orally, mercury succinimide intramuscularly. Recovery. Discharged August 1, 1925. Diagnosis: acute luetic meningoencephalitis.

**Case 2:** C. D., 29 years, male, admitted March 11, 1926. Present illness of three and one half months duration. Complaints: headaches, generalized convulsions, somnolence, vertigo, photophobia. Syphilis acquired in 1923. Examination: drowsy, pupillary light reflex greatly diminished, photophobia, stiff painful neck, bilateral Kernig sign. Fundus: neuroretinitis with edema of both discs of 1 D. Blood Wassermann four plus. Cerebrospinal fluid (March 12, 1926): slight xanthochromia, 250 cells (lymphocytes), Pandy three plus, Wassermann four plus, gold solution curve 23444332100, mastic solution curve 234550. Temperature varied between 96.8 and 99°. Treatment: spinal drainages, sulpharsphenamine intramuscularly. Recovery. Discharged March 31, 1926. Diagnosis: acute luetic meningoencephalitis.

**Case 3:** G. K., 30 years, male, admitted September 15, 1925. Present illness of two weeks duration. Complaints: headache, pain on moving the eyes, pain in the neck and along the spine, impaired vision, weakness, loss of weight. Primary luetic infection in April, 1925. Examination: drowsy, pupils react to light, weakness of both sixth nerves, bilateral suggestively positive Kernig sign, knee and ankle jerks diminished. Fundus: neuroretinitis with swelling of the right optic disc of 2 D., no swelling of the left disc. Blood Wassermann four plus. Cerebrospinal fluid (September 15, 1927): clear, 15 cells (lymphocytes), Pandy two plus, Wassermann four plus, gold solution curve 012333-21000, mastic solution 344420. Temperature varied between 96.7 and 99.6°. Treatment: spinal drainages, potassium iodide orally, sulpharsphenamine

intramuscularly. Recovery. Discharged on September 30, 1925. Diagnosis: acute luetic meningitis.

**Case 4:** H. W., 28 years, male, admitted May 9, 1927. Present illness of five weeks duration. Complaints: constant headache, worse at night, diplopia, vomiting not projectile in type. Syphilis denied. Examination: pupils react normally to light, horizontal nystagmus when eyes are at rest and upon lateral deviation, weakness of the left fifth and seventh nerves. Fundus: bilateral choked disc, O. D. 3 D., O. S. 3. D. Blood Wassermann four plus. Cerebrospinal fluid (May 11, 1927): slight xanthochromia, 116 cells (lymphocytes), Pandy three plus, Wassermann four plus, gold solution curve 45555443210, mastic solution curve 555530. Temperature within normal limits. Treatment: spinal drainages, potassium iodide orally, sodium iodide intravenously, sulpharsphenamine intramuscularly. Recovery. Discharged on June 6, 1927. Diagnosis: acute luetic meningoencephalitis.

**Case 5:** B. M., 25 years, female, admitted August 22, 1927. Present illness of seven weeks duration. Complaints: headaches, nonprojectile vomiting, diplopia, visual impairment, vertigo, staggering on walking, loss of weight. Syphilis denied. Examination: pupils react promptly to light, weakness of the left fifth and both sixth nerves, slight nystagmus, suboccipital tenderness, mild ataxia in the upper limbs, Romberg positive, occasional positive Babinski reflex on the right, leukoderma coli. Fundus: papilledema, choking of the discs O. D. 3 D., O. S. 4 D. Fine hemorrhages over the discs. Blood Wassermann four plus. Cerebrospinal fluid (August 24, 1927): slightly turbid, 132 cells, Pandy three plus, Wassermann four plus, gold solution curve 55555554210, mastic solution curve 555540. Temperature varied between 98 and 100.8°. Treatment: spinal drainages, potassium iodide orally, sulpharsphenamine intramuscularly. Improvement (symptomatically free but papilledema persisted). Discharged September 18, 1927. Diagnosis: acute luetic meningoencephalitis. Examination on December 8, 1927, disclosed no positive neurological findings, and the ophthalmologist reported no swelling in the ocular fundi.

**Case 6:** A. C., 22 years, female, admitted December 7, 1926. Present illness of five weeks duration. Complaints: headache, nausea, vomiting, visual impairment, diplopia, pain in the back of the neck. No history of syphilis. Examination: pupils unequal but react promptly to light, weakness of the right sixth, both seventh, and left eleventh nerves, dysmetria in both upper limbs. Fundus: double choked disc, O. D. 3 D., O. S. 3. D. Blood Wassermann four plus. Cerebrospinal fluid (December 9, 1927): turbid, 534 cells (lymphocytes), Pandy four plus, Wassermann four plus, gold solution curve 55555543210. Temperature normal. Discharged December 24, 1926. Treatment: potassium iodide orally and mercury succinimide intramuscularly (by family physician). Check-up examination on February 19, 1927: Complaints: none. Neurological examination negative. Fundus: ? residual neuroretinitis, no swelling, postneuritic optic atrophy. Marked improvement. Diagnosis: acute luetic meningoencephalitis.

**Case 7:** A. K., 26 years, female, admitted October 14, 1927. Present illness of seven weeks duration. Complaints: headaches, dizziness, diplopia, nausea, and vomiting. No history of primary lesion. Secondary eruption in March, 1927. Examination: pupils react normally to light, rapid fine horizontal nystagmus on lateral deviation of the eyes, umbilical reflex lost, knee and Achilles reflexes increased equally, abortive ankle clonus on both sides, no Babinski, Romberg sign present, ataxic gait suggestive of the cerebellar type, leukoderma coli. Fundus: papilledema of 2 D. O. D., neuroretinitis O. S. with swelling of 2 D. Blood Wassermann four plus. Cerebrospinal fluid (October 19, 1927): colorless, seventeen cells, Pandy two plus, Wassermann four plus, gold solution curve 12222110000, mastic solution curve 221100. Temperature varied between 98 and 99°. Treatment: spinal drainages, potassium iodide orally, and intramuscular injections of sulphars-

phenamine. Recovery. Discharged November 21, 1927. Diagnosis: acute luetic meningoencephalitis.

In tabulated form are listed below the fundus findings in these seven cases:

| | | | Before treatment | After treatment |
|---|---|---|---|---|
| 1 | S.M. | Acute luetic meningoencephalitis | 6/24/1925<br>Papilledema<br>O.D. 3D<br>O.S. 2D | 7/17/1925<br>Residual neuroretinitis. No measurable swelling. |
| 2 | C.D. | Acute luetic meningoencephalitis | 3/11/1926<br>Neuroretinitis with edema of discs of 1D. | 8/26/1926<br>Normal fundi |
| 3 | G.K. | Acute luetic meningitis | 9/16/1925<br>Neuroretinitis with swelling of the rt. disc of 2 D. and of the left none. | Not examined |
| 4 | H.W. | Acute luetic meningoencephalitis | 5/9/1927<br>Papilledema<br>O.D. 3D<br>O.S. 3D | 6/3/1927<br>No measurable swelling |
| 5 | B.M. | Acute luetic meningoencephalitis | 8/24/1927<br>Papilledema<br>O.D. 3D<br>O.S. 4D<br>Fine hemorrhages over discs. | 12/8/1927<br>Residual neuroretinitis. No measurable swelling. |
| 6 | A.C. | Acute luetic meningoencephalitis | 12/8/1926<br>Papilledema<br>O.D. 3D<br>O.S. 3D | 2/19/1927<br>Residual neuroretinitis. No swelling. Questionable early postneuritic optic atrophy. |
| 7 | A.K. | Acute luetic meningoencephalitis | 10/14/1927<br>O.D. Papilledema 2D.<br>O.S. Neuroretinitis with a few small hemorrhages and swelling of 2D. | 12/6/1927<br>Neuroretinitis<br>O.D. 1D<br>O.S. less than 1D. |

Consideration of this table discloses several important features.

The fundus changes varied from a neuroretinitis with mild edema and moderate swelling of the discs to a severe papilledema with high choking. As a rule, however, the swelling was not of large extent, amounting to but two or three diopters. In but two cases were hemorrhages observed in the fundus.

Following improvement in the general condition the fundus lesions underwent marked regression. In all cases but one (No. 7) the swelling subsided completely. Postneuritic optic atrophy was observed in one case after disappearance of the acute symtoms. In the other cases examined the fundi were normal or presented a mild residual neuroretinitis.

The fundus lesion was probably in all cases fundamentally a neuroretinitis, indicating the inflammatory nature of the process. Nevertheless in five of these seven cases the clinical appearance was that of papilledema, true choked disc, simulating closely that associated with cerebral neoplasm. Case 7 was of interest in this regard one eye showing papilledema, the other neuroretinitis.

Visual fields were obtained in but four cases. They disclosed only general contraction of both form and color fields.

The occurrence of choked discs in cases of acute luetic meningitis or meningoencephalitis is of considerable clinical importance, more particularly so from the standpoint of differential diagnosis. The symptomatology and signs of this type of neurosyphilis may closely simulate the clinical picture of numerous other affections of the nervous system presenting alterations in the ocular fundi; notably brain tumor with rapidly developing symptoms, abscess, encephalitis, tuberculous meningitis, lead encephalopathy, and intracranial hemorrhages. In all these conditions are found headaches, vomiting, dizziness, convulsive seizures, disturbances of consciousness, cranial nerve palsies, and other signs of general or focal brain disease. Choked disc when added to a symptom group of this kind easily confuses the diagnosis. We have found this to be particularly true in acute luetic meningitis and meningoencephalitis, probably because of their relative infrequency and the usual absence of a history of lues. It has been our experience in these cases that the disclosure of a choked disc upon the initial examination is more likely to suggest some disease of the brain other than syphilis, usually tumor. Three of our seven cases were admitted to the hospital for operation, presumably for cerebral neoplasm.

The correct diagnosis is more likely to be suspected if it is borne in mind that these cases may present a well developed papilledema in the fundus.

The differentiation of the underlying etiology, we believe, rests upon complete serological studies, ncluding both blood and cerebrospinal fluid. In but three of our seven cases was there a history of luetic infection. In all of them, fortunately, there was a positive blood Wassermann reaction, this pointing to the proper diagnosis. However, it is to be noted that the blood Wassermann reaction may be negative, as in a case of acute luetic meningoencephalitis with optic neuritis reported by Margulis[1]. In this same case syphilis was denied.

Because of these considerations it appears to us desirable to examine the cerebrospinal fluid with regard to syphilis in all acute nervous diseases accompanied by choked disc, and more particularly so when there is no other evidence of lues.

## Conclusions

(1) Papilledema or neuroretinitis is a frequent accompaniment of acute luetic meningitis or meningoencephalitis.

(2) It is usually of but moderate degree and disappears as a rule under treatment.

(3) Its presence is likely to confuse the diagnosis.

(4) Complete serological studies are therefore essential in acute nervous diseases accompanied by choked disc.

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## Reference

[1] Margulis, M. S. Akute diffuse fieberhafte syphilitische Meningoencephalomyelitiden. Deutsche Zeitschrift für Nervenheilkunde 1926, v. 89, Feb., p. 242.

# SPOROTRICHOSIS OF THE EYELID

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SAINT LOUIS

Sporothrix, distinctly pathogenic, was several times recovered from linear excoriations in the conjunctiva of three eyelids of the same patient. But the progress under potassium iodide and tincture of iodine has not been very satisfactory.

The case here reported differs in practically every clinical respect from cases described in rather numerous previous reports from different sources, and is reported as sporotrichosis only because on three occasions, several weeks apart, a sporothrix of decided pathogenicity was recovered from scrapings of the lesions.

**Case:** Mrs. N. B., age 34 years, a mulatto woman, has been under treatment in the Washington University out-patient department for trachoma since September, 1919. The condition was in a chronic state when she was first observed, the lids showing the velvety appearance of a trachoma of long standing with some scarring of the cornea. From time to time ulcers of the cornea have appeared and healed under treatment. There is at present a moderate entropion of the lower lids and some fine lashes appear, which have to be removed to prevent irritation of the cornea.

In March, 1927, a narrow white line was observed extending along the margins of the right upper, right lower, and left lower lids, for approximately two-thirds of their length, being in each instance some two to three millimeters in width and representing a shallow excoriation of the conjunctiva filled with a cheesy material easily removed by a blunt instrument or cotton-wrapped applicator. The base of the excoriations was slightly granular in appearance, very pale gray in color, never bleeding and never painful. No sign of inflammation appeared in or about these excoriations. They did not heal and they progressed exceedingly slowly if at all. A smear made March 21, 1927, stained with methylin blue, showed rounded organisms resembling yeast bodies. Cultures sent to the clinical bacteriological laboratory were reported hemolytic staphylococcus and streptococcus.

Numerous antiseptic and astringent solutions were employed locally. The patient had a negative Wassermann but was given a course of mercury bichloride intramuscularly (15 m. of one percent solution), because the lids and corneas gave evidence of uncontrolled chronic trachoma. After six or eight weeks of treatment, during which time the patient was using locally some mild antiseptics (protargol one percent and optochin one percent), lids and corneas showed marked diminution of inflammatory signs. The eyes became quite comfortable when troublesome lashes were kept out. The linear excoriations along the lid margins, however, showed little signs of healing, and on October 21, 1927, scrapings from these lesions were cultured on various media, both aerobically and anaerobically. A smear made at this time showed diphtheroid organisms in abundance and a less numerous gram-negative bacillus, both since found to be nonpathogenic.

A few sporothrix colonies were found, which grew poorly at first but readily on transplantation. White rats inoculated with the organism died in a few days, showing the characteristic gumma-like lesions in the lungs from which the sporothrix was again recovered.

Treatment is now being given with potassium iodide by mouth and local applications of tincture of iodine, but so far the progress has been rather disappointing. For some time there has been less irritation, but the excoriative lesions along the lid margins are still present.

As stated at the outset, this picture differs markedly from that generally described. The typical lesion is a gumma-like nodule which gumma-like may appear in any tissue, but which is most commonly found on the skin and mucous surfaces. The eye cases have been reported most frequently in the

lids and conjunctiva, but others are reported in the lacrymal duct and sac, on the bulbar conjunctiva, the cornea, the iris, and even the retina. The superficial infections are usually ectogenous in origin, while the intraocular appearance of the disease usually accompanies a generalized sporotrichosis endogenous so far as the eye is concerned. The lesions are rather acutely inflammatory in nature, with redness, swelling, rupture, and discharge of scantily purulent nature producing fistulous openings very slow in healing and very resistant to local treatment. The content of the nodule is gelatinous. There is marked accompanying adenitis and often constitutional manifestations of fever, malaise and so on.

Conjunctival cases closely simulate Parinaud's disease, being distinguished from it mainly by culture and recovery of the sporothrix and by the size of the nodules.

The organism was first recovered from human lesions by Schenck in 1898, and is called Sporothrix schenckii. A similar sporothrix reported by Beurmann from similar lesions exhibited some cultural variations and was named after this author. Serum reactions in a case reported by Wilder and McCullough indicate the identity of the two organisms.

The first American case involving the eye was reported by H. Gifford in 1910. This case was confirmed by culture. He also described five other cases similar clinically, but not confirmed by culture.

The second case culturally proven was by Wilder and McCullough[1], who gave an account of accidental inoculations from cultures in the conjunctivas of one of the authors. Eleven days later appeared symptoms of acute inflammation of the conjunctiva, with nodule formation, pain, swelling, regional lymphadenitis, and rather violent constitutional disturbance. Recovery in about two months followed administration of potassium iodide.

Bedell, 1914, reported the fourth proven American case, while in 1922 and 1924 S. R. Gifford added the remaining two cases up to now in this country. The latter in a comprehensive review of the literature summarizes some thirty-two cases reported from all sources, mostly from France. These include cases involving the skin of the lids, the conjunctiva, lacrimal sac, interior of the globe, and brow and orbit and lids combined. The intraocular lesions are secondary to generalized sporotrichosis, the infection being blood-borne.

There is a notable variation in the course and severity of the cases reported. Some were acutely inflammatory in nature, with marked local and general symptoms. Others ran a chronic course with extensive destruction of tissue, in some even the entire globe being disorganized. In still others the lesions amounted to no more than a small suppurating nodule with very little effect on surrounding structures and almost no symptoms.

The treatment consists in the exhibition of potassium iodide by mouth in doses of from two to eight grains per day. This is apparently a specific, and almost all cases have yielded to it in reasonable time, although in some it was of questionable benefit. A few nodules have been excised as being resistant to medical treatment.

It is noteworthy that many cases of sporothrix infection of various parts of the body are reported from the Mississippi valley. Doubtless many more cases have occurred, both involving the eyes and otherwise, than have appeared in the literature.

*Carleton building.*

## Bibliography

(Note. Since practically all reported cases are summarized and listed in the following no attempt is made to give a complete list here.)

[1] Wilder and McCullough. Jour. Amer. Med. Assoc., 1914, v. 72, p. 1156.
[2] Bedell. Proc. Amer. Ophth. Soc., 1914, v. 13, p. 720.
[3] Gifford, S. R. Arch. of Ophth., 1922, v. 51, p. 540.

# A CASE SUBSTANTIATING THE RELAXATION THEORY OF ACCOMMODATION

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CINCINNATI

The patient had had optical iridectomies many years earlier, and the observations were facilitated by the presence of nuclear lens opacities. Not only could the anterior surface of the lens be seen to move forward during accommodation, but during maximum accommodation the zonular fibers merged imperceptibly into the capsule whereas during distant vision fine crenations appeared at the insertions of the fibers. Read in connection with presentation of patient before Chicago Ophthalmological Society. (See page 303 for report of discussion.)

The more recent discussions on the mechanism of accommodation have leaned decidedly toward the view that when the ciliary body contracts, the main body of the muscle moves forward and releases its tension on the main mass of the zonular fibers. The case herein recorded was peculiarly suited for the observation of a bundle of radiating fibers attached to the anterior capsule of the lens.

C. B., aged 35 years, presented himself because of his defective vision. He had had bilateral optical nasal iridectomies done twenty years before, and had considerable peripheral but not much central vision. He was told at the time that nothing more could be done and accepted that dictum until recently his family physician became interested in the matter and sent him for further study. General physical examination is not significant in the present study.

Case illustrating the relaxation theory of accommodation. (Brown).

Ocular examination: Palpebral fissures equal, no exophthalmus. Lids, no ptosis or retraction. Ocular movements full in all directions. Conjunctivas clear. Corneas clear. Pupils irregularly oval with broad, deep nasal operative colobomata. Lenses, central nuclear, bilateral, whitish opacities, seated toward the posterior poles. There are a few whitish flocculent areas here and there in the cortex of each lens. Fundi, details entirely hazy; seen best with a high minus lens through the periphery.

I felt that if any case could be seen accommodating with the lens unmolested by operative procedure, this would be the one, not merely because of the patient's colobomata, but in the presence of the associated nuclear opacities. The zonule could not be seen by shining the slit-lamp beam directly in the angle. It was only by reflecting the light off the surface of the nuclear opacities and by subsequent internal reflection of the beam on to the zonule that the fibers were visible. When the light was directed at just the right angle the fibers appeared as golden, shimmering threads, and their insertion in the anterior capsule could be seen. After much practice the patient was taught to look far and near without moving his eyes in the slightest degree, for he was intelligent enough to be taught to accommodate mentally. By oblique illumination the anterior surface of the lens could be seen moving steadily forward during accommodation and by more direct examination the outline of the equator of the lens was seen to become more smooth than it was when the eye was fixed for distant vision. These confirm Hess's observations.

By far the main observations made on this patient were those noted at the insertion of the fibers of the anterior capsule. When the patient was accommodating as fully as possible, the insertions of the fibers merged imperceptibly into the capsule. As the patient was directed to look into the distance the fibers were seen to shimmer in a half

light, and fine crenations appeared at the insertions of the fibers, causing an appearance roughly analogous to formation of fine crenations on the back of the hand when a bundle of fine hairs are pulled up.

The actions of mydriatics and miotics were of especial interest in this case. The patient was directed to gaze into the distance, and 0.75 percent eserin was dropped into the left eye. In six minutes the fibers were seen to shimmer and the crenations became smoothed. The anterior surface of the lens moved forward, as did the shadows cast by the anterior ciliary processes, and the waves in the edge of the lens became smoother. The pupillary area became smaller but not enough to interfere with the observations. A two percent solution of atropin was then instilled. After ten minutes, no appreciable effect was seen. A view of the zonule fifteen minutes after three drops, each at two minute intervals, showed tiny crenations appearing at the insertions of the fibers. The reactions under eserin and atropin, then, were exaggerations of the effects produced by distant and near vision.

The effect of light stimulus to the independent pupillary and ciliary body reactions could not be interpreted, for it was impossible to see this delicate reaction without a very bright light beam. I was likewise unable to note Graves's[6] observations of the effect of "squeezing" or pressing the eye in producing accommodation. This may have been due to the disconcerting effect, and to quick change of focus of the patient before the reaction could be seen.

Measurements of the changes in the lens periphery were not satisfactory enough to report.

Observations of fact can so easily be misinterpreted that a sharp distinction should be drawn between observation and interpretation. For example, Luedde[1] has suggested this in mentioning many contradictory statements of many observers, which when thoroughly digested point to countless differences in point of view in interpretation, rather than actual adherence to discussion of accommodation in the human eye. I agree with Blaauw[2] that the discussion of comparative anatomy definitely befogs the issue, and also that the manipulation of dead eyes probably destroys the fundamental physiologic processes which are necessary for correct interpretation of the phenomena seen.

In accepting the relaxation theory of accommodation it is not necessary to concede the property of elasticity to the lens. Gullstrand[3], defining change in shape of the lens in terms of shifting cortex, probably has enunciated the most workable hypothesis. May not the lens, with the capsules relaxed, increase in its anteroposterior axis, not by springing forward like a coiled spring released from tension, but by a passive shifting of the cortex induced by pressure of the vitreous near the periphery of the posterior aspect of the lens?

Apparently, from the results of Graves's[6] investigation of his case, the capsules are pulled during distant vision and relaxed during accommodation. The case herein reported I believe to be an even more satisfactory demonstration of this principle. For all practical purposes, this lens may be considered to be operating in situ without traumatic or operative manipulation. Certainly the fine crenations seen at the insertions of the fibers into the anterior capsule only when the eye is not accommodating or in the presence of atropin could only be due to tautness of the fibers. If the periphery of the lens is flattened during accommodation this could only conceivably be due to hydrostatic pressure between the vitreous and aqueous by the actual arrangement of the fibers. Although, as Berger[4] expresses it, the zonule is a system of small cords which permits independence of action, these cords can be seen in this case to arise from the anterior capsule and to come immediately forward, so that not even when they are most taut do they produce tiny grooves in the capsule, which they most likely would if they exerted sufficient pressure to actually flatten the periphery.

My main endeavor in the presentation of this case is not to enter into a discussion of the relative merits of the theories of accommodation, but to relate

observations. I would not presume to present optical observations relating to the expansion or flattening of the lens periphery, in the face of the many thousands done by Tscherning[5] and others. I simply wish to call attention to a confirmation of observations made by Graves[6], and also to the noteworthy fact that this case was peculiarly suited for observing the lens in its normal environment.

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### References


[1] Luedde, Arch. of Ophth., 1927, Jan.
[2] Blaauw, Arch. of Ophth., 1927, Nov.
[3] Gullstrand, Arch. f. Augenh., 1912, v. 72.
[4] Berger, Encycl. Franc. d'Opht. v. 1, p. 359.
[5] Tscherning, Physiological Optics.
[6] Graves, Trans. Amer. Ophth. Soc., 1925.


# NOTES, CASES, INSTRUMENTS

## VISION—ITS RELATION TO EFFICIENCY*


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A direct relationship between vision as rated by the Snellen chart and efficiency does not hold good in all instances. The vision rating of an individual should give equal credits to three separate factors as follows:

(1) vision by Snellen chart,
(2) absence of eyestrain symptoms,
(3) good near vision.

Individuals performing quite fine work will require one hundred percent of the above factors. Those doing work such as required of plumbers, carpenters, machinists, and painters, will obtain satisfactory efficiency with 66 2/3 percent. Those doing ordinary labor will not require the full credit for any one of these factors but should have sufficient vision rating for safety. This figure should not be less than 6/20.

Failure to make the full percentage of credit for the various types of work will in each instance result in a falling off in efficiency. But those blind or nearly blind may be trained to quite efficiently perform special duties.

A record of (1) those doing very fine work, (2) skilled machinists, (3) carpenters, plumbers, painters, etc., taken in 1923 at Nela Park, East Cleveland, is given below. These people are all rated as quite efficient in these departments, and the figures show a tendency of vision ratings to adjust themselves in accordance with the demands of the work.

| | Group 1 | Group 2 | Group 3 |
|---|---|---|---|
| Normal vision—no glasses | 72% | 52% | 30% |
| Normal vision—with glasses | 20% | 26% | 36% |
| Defective vision | 8% | 20% | 30% |
| Blind in one eye | 1% | 2% | 4% |

A record of eight hundred employees doing quite fine work was taken in two different years. The interval was directed toward obtaining a high vision standard in this group, with the results shown below. It was found that an average efficiency increase of twenty percent was obtained with correction of visual errors in people doing this class of work.

| | 1923 | 1927 |
|---|---|---|
| Normal vision—no glasses | 72% | 76% |
| Normal vision—with glasses | 20% | 21% |
| Defective vision | 8% | 3% |
| Blind in one eye | 1% | |

Individuals having one relatively good eye and one quite poor eye may be rated in accordance with the better eye from an efficiency standpoint. This particularly applies to those eyes affected by organic changes or with amblyopia associated with a squint. Loss of stereoscopic vision does not prove to be an important factor in these cases. Their narrowed visual field would be a hazard in some types of work.

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* Read before the Industrial Section of The Cleveland Academy of Medicine, Hotel Winton, January 18, 1928.

## A CASE OF DYSTROPHY OF THE CORNEA WHICH DISAPPEARED ON THE ADMINISTRATION OF FATS

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PHILADELPHIA

The relation which fat soluble vitamin bears to certain degenerative conditions of the cornea was first called to the attention of ophthalmologists by Osbourne and Mendel in 1913. They reported the development of keratomalacia in rats which had been fed on a diet from which vitamin A was absent. Osbourne later produced the same results in many other animals. The first sign of the oncoming ocular changes was an increase in lacrimation. Later this became less marked and the tears became serosanguineous. Hyalinization of the conjunctiva followed, and then corneal involvement.

Before this, in 1910, Fuchs had given identity to epithelial dystrophy of the cornea, reporting thirteen cases in his original monographs. Since then cases have been reported by Reese, Knapp, Guist, Uhthoff, Whitham, Friedenwald, Rogers, Gifford, Holloway and others. The only one to have a very definite view as to the probable etiological factor was Whitham, whose two patients were both diabetics, the ocular changes varying with the alteration of the diets and with the consequent amount of sugar in the urine and blood.

The case here reported is that of Mrs. M. E., aged 32 years, seen on the eighteenth of last May through the kindness of Dr. A. A. Eshner. She had had irritable eyes for a year, considerable lacrimation and photophobia, but no pain. Her vision was blurred, and some glasses which she had gotten when the trouble first started did not help her. She had been working very hard, not resting well, and had lost ten pounds in weight. There was no cough or dyspnea, her bowels were regular, no headache or vertigo. She did not use alcohol. Had two healthy children and no miscarriages. Heart, lungs, abdomen, and throat were negative. Blood pressure 110/65. Urine had sp. gr. of 1000, no albumin or sugar. Her diet was peculiar in that she never ate butter or eggs or drank milk. Her vision was 5/10 in each eye, which correction of her hyperopia and astigmatism did not improve. Both corneas showed irregular small gray blebs of the epithelium, arranged in an irregular horizontal band across the central portion of each eye, about eight or ten in number. Bowman's membrane was not involved. The conjunctivas were slightly injected but there was no ciliary injection. The anterior chambers, pupils, and irides were normal. Tension was eighteen mm. in each eye. Except for the hazy areas in the corneas the media were clear, and the fundi were normal.

She was given a boric acid and holocain lotion, a tonic of iron, quinine and strychnia, cod liver oil, a teaspoonful t.i.d., and milk and butter were added to the diet list. In a week the corneas were distinctly better, the blebs being smaller. This improvement continued until by July 12, two months after her first visit, corrected vision was 5/5 and the corneas were quite clear. There has been no return of the condition.

The course of this case naturally raises the thought that the condition was of dietetic origin, due possibly to the lack of vitamin A. If considered in conjunction with Whitham's two cases it suggests the possibility of a disturbed balance between the fats and carbohydrates. Whitham lessened the latter in his cases and we increased the former in ours, and in both instances there was decided ocular improvement. In our case, which was seen in a much earlier stage than Whitham's, a complete cure resulted.

*3 150 Locust street.*

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## REDUCTION OF INTRAOCULAR TENSION DURING SYNCOPE: CASE REPORT

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BOSTON

Patient, a male aged seventy-six years, has been under observation about

one year, showing very high myopia, wearing minus eighteen spheres O.U. At first examination, the right eye showed a free pupil, considerable opacity of the lens, vitreous full of fine, floating opacities. Fundus details were not obtained. The left pupil showed some posterior synechiae, with some organized exudate, apparently the result of a previous iritis.

About three months later, the patient presented himself with an acute inflammation, with some pain, of the left eye. There was marked injection with chemosis apparent in the lower outer bulbar conjunctiva. To digital palpation, the eye was very sensitive, and tension apparently increased. In order to be sure of our findings, repeated tests were made at this visit, and these resulted in a fainting attack. The patient was placed in a recumbent position in the examining chair and aromatic spirits of ammonia given. It was interesting to note that, while he was in syncope, digital palpation showed a reduction in tension in both eyes, estimated approximately twenty points on the MacLean tonometer.

On recovery from syncope the tension of both eyes returned to the previous status. Our problem in diagnosis was between a tenonitis of the lower outer quadrant and acute inflammatory glaucoma, secondary to pupillary interference. The eye returned to normal in one week under the use of miotics and heat.

This case is reported because of the rare opportunity of comparing tension before and during syncope.

*220 Clarendon street.*

## EXPLOSION OF ARTIFICIAL EYES IN THE ORBIT

S. Hanford McKee, M.D.
MONTREAL

Dr. W. W. Lewis' report in the December number of the Journal, page 923, prompts me to record a small series of such cases which I have intended reporting for some time. They all occurred in 1923 and January 1924.

M. McF., an adult male, while at his work, had the glass eye on the right side explode. The artificial eye was completely demolished and when I saw him within an hour or two of the accident he was in quite a state of shock. I removed innumerable small pieces of glass from the socket.

G. S., a young woman of twenty-two years, within a few months during 1923, had three glass eyes explode in her orbit. This patient had been most particular about her artificial eyes and had gone to most of the large American centers in search of the best that could be procured.

In January, 1924, A.M., an adult male of twenty-eight years, came to have his eye socket inspected, as the day before an artificial eye had exploded in the orbit. He said "he felt as if his brains were being knocked out", and when I saw him he was still in a very nervous state.

*1528 Crescent street.*

## "EXPLOSION" OF ARTIFICIAL EYE IN ORBIT

Edwin Blakeslee Dunphy, M.D.
BOSTON

Since reading the case report of Dr. Wm. W. Lewis in the December issue of the Journal, I have seen a similar case of "exploding" glass eye.

The patient, a young man of twenty years, was sitting quietly on a screened-in porch, reading a book. Suddenly a loud report was heard, as if a pane of glass had broken, and the patient felt as if he had been struck on the head. His parents, who were present at the time, confirm his story. Immediately he had severe pain in his eye socket and found it was impossible to remove the glass eye. I removed it with some difficulty, and found over the stump a lacerated conjunctiva which bled considerably. The glass eye showed an irregularly broken posterior surface. The broken glass was recovered from within the eye. The prothesis had been made by a reputable firm and had been worn four months.

*520 Commonwealth avenue.*

# SOCIETY PROCEEDINGS

## COLORADO OPHTHALMOLOGICAL SOCIETY

November 19, 1927

DR. JOHN A. MCCAW presiding

### Conical cornea, corneal ulcer, improved vision

DR. G. L. STRADER, of Cheyenne, Wyoming, presented Mr. H., aged thirty years, who had complained of failing vision for the past four years. On examination in January, 1923, a diagnosis of bilateral conical cornea was made. The vision in the right eye was 2/200, which was improved to 20/70 with —10. sph. —2.00 cyl. ax. 75°. The vision in the left eye was 20/100, which was improved to 20/40 with +1.00 sph. —2.50 cyl. ax. 105°.

In January, 1924, the vision in the right eye remained 2/200 and no combination of lenses made any improvement. The vision in the left eye had fallen to 20/200, which was again improved to 20/40 with —2.50 sph. +8.00 cyl. ax. 20°.

In July, 1925, the right eye developed a central corneal ulcer, which healed in three weeks. The patient returned for examination in February, 1926, when the vision in the right eye was 20/200 and improved to 20/40 with —6.00 sph. —2.50 cyl. ax. 180°. The same vision with the same correction obtained at the time of the last refraction in September, 1927. This interesting observation as to the very decided improvement in the visual acuity of the right eye was attributed to the healed corneal ulcer and the changes it had effected in the refraction of the cornea.

*Discussion.* DR. JAMES A. PATTERSON suggested that endocrine therapy should be given a test in cases of keratoconus. He cited a case where improvement in the general condition of the patient, as well as the condition of the eyes, had followed the use of parathyroid and other endocrines.

DR. WILLIAM H. CRISP, referring to the fact that such eyes were often refracted under pilocarpine, suggested for the purpose of refraction tests, contracting the patient's pupils to the size probably used in near work, by the use of an electric bulb placed near the eye and slightly to one side.

DR. DONALD H. O'ROURKE reported a case of keratoconus now under treatment where pilocarpine in 0.25 per cent strength, t.i.d., had no miotic effect. The strength of the pilocarpine was increased gradually to 0.5, and finally 2 per cent. As a check a fresh solution was ordered and instilled at the office, with similar lack of miotic effect. In some of the cases there could be no question that the usual permeability of the corneal layers was in some manner interfered with.

DR. EDWARD JACKSON reported two of the most severe cases of conical cornea in his experience. Both of these cases he had seen and examined at intervals over a period of twenty years. The first case showed definite ocular and general improvement following a gastroenterostomy. The second case showed equally satisfactory improvement following thyroidectomy. The latter patient used his eyes hard in teaching school, and both eyes were still subject to attacks of inflammation accompanied by increased and corneal infiltration opacification. These cases emphasize the importance of constitutional factors.

### Delayed retinal detachment after injury

DR. JAMES M. SHIELDS showed Mr. S. O., aged 27 years, who had been before the Society on two previous occasions. On January 31, 1925, a small piece of steel penetrated the left cornea, at about three o'clock, just inside the temporal limbus. It passed through the iris and supposedly through the zonule, for the lens never showed any clouding. X-ray localization showed the foreign body above the

horizontal plane back of the equator and to the temporal side of the midline of the eye. The magnet extraction was done through a scleral incision between the external and superior recti well behind the ciliary region.

For one year after the extraction this eye had 20/20 vision with a correcting lens. After that there developed a retinitis proliferans, and at the present time there was extensive retinal detachment which had begun in the temporal periphery and now involved all of the retina save the upper quadrant. Vision was reduced to form perception. The eye was shown to emphasize the need for guarded prognosis in cases of this type.

*Discussion.* Dr. George L. Strader stated that in his cases of magnetic intraocular foreign bodies, he preferred to draw the foreign body into the anterior chamber, and that he never used a scleral incision unless absolutely necessary.

Dr. William H. Crisp did not believe that the weight of opinion and experience in the United States would support this procedure.

Dr. James M. Shields, closing, doubted the advisability of removing any foreign body from the vitreous through the anterior chamber, and particularly the foreign body in his case, because of its location.

**Keratitis petrificans**

Dr. William A. Sedwick brought L. P., negro, male, 33 years of age. His family history was negative, except that his mother lost the sight of both eyes because of trachoma. When a small boy he was struck in the left eye with a whip lash, but recovered with no ill effects. Ten years ago a severe attack of malaria necessitated hospitalization and prolonged treatment. Otherwise he had always been strong and well nourished. The report on his physical condition, urine, blood Wassermann, etc., was entirely negative except for an eosinophilia for which no etiologic factor was established.

At present both corneas showed symmetrically distributed with clear cornea between them and also between the group of opacities and the sclera. The band-shaped opacities were grouped at the corneal periphery. There was more encroachment on the center of the right cornea. The corneas were not anesthetic. There was no staining and no roughness of the lids. The pupil reactions were normal in all respects. Vision O.D. was 15/60, corrected with +1.75 cyl. ax. 90° to 15/13. Vision O.S. was 15/120, corrected with +0.50 sph. +1.50 cyl. ax 60° to 15/13.

The patient claimed that such a condition as was now present was also present when he was about twenty years of age; that it came on rapidly and then disappeared rapidly and completely. The present changes, as described, were noticed in 1923 and had remained stationary according to the patient's observation for a period of about six months.

*Discussion.* Dr. William H. Crisp suggested that in the total absence of inflammatory reaction and in the absence of a typical band-like appearance, the symmetrical location in both eyes and its apparent confinement to the substantia propria the condition might represent an atypical form of arcus senilis or juvenilis.

Dr. Edward Jackson thought this as plausible an explanation as any.

Dr. William A. Sedwick stated that with the corneal microscope it was seen that the changes were not confined to the substantia propria alone, but invaded the epithelium as well, and that the diagnosis of keratitis petrificans seemed appropriate.

**Optic atrophy from birth**

Dr. W. H. Crisp presented a man, aged 25 years, who had come on account of defective vision in the right eye. The optic disc of this eye was distinctly atrophic and all the retinal vessels very narrow. There was no discoverable macular lesion, and the eyeball was otherwise normal. This eye was hyperopic about six diopters, the left very slightly hyperopic. So far as the patient knew, the vision had

been the same since early infancy. The vision of the left eye was normal.

*Discussion.* Dr. William A. Sedwick suggested trauma at birth as a causative factor, a rupture of the optic nerve either complete or partial.

### Hemorrhage in the macula

Dr. Donald H. O'Rourke exhibited Mr. J. B. R., aged 25 years. On October 18, 1927, the patient went into a dark basement and while walking about he struck his right eye on a projecting 2" by 4" timber. The impact knocked him to the floor momentarily, but consciousness was not lost. He found his way to the elevator and reported the accident to his foreman. Examination of the patient in less than one hour after the accident showed no external evidence of trauma to either the scalp, the brow, or the tissues about the eye. The bulbar conjunctiva was slightly suffused; the pupil was more widely dilated than its fellow and responded sluggishly and incompletely to light. Further external examination was entirely negative. Ophthalmoscopic examination revealed a circular hemorrhage, one-third of a disc in diameter, sharply circumscribed, and confined to the macula. In the vitreous were several small freely movable exudates. Vision was perception of light. The fundus was examined carefully each day for a period of four weeks, Sunday excepted. At the end of this period a very slight thinning of the hemorrhagic area was evident.

One week after the discharge of the patient he was seen at this meeting, at which time no evidence of the hemorrhage remained. The eye was blind and the pupil fixed. The fundus, disc, and macula were quite normal in appearance. There was at the time of exhibition of the patient certainly no ophthalmoscopic evidence to account for the complete loss of vision.

*Discussion.* Dr. James A. Patterson cited a case following an automobile accident, in which the eye on the side opposite to the injury showed nothing at the time of the accident. A few months later the nerve head was white and the eye blind.

Dr. Edward Jackson offered as an explanation for this case a fracture at the apex of the orbit with injury to the optic nerve, as there was sufficient force at the time of the injury to knock the patient down; or hemorrhage into the sheath of the optic nerve. During the World War it was learned what could happen to an eye without there being any demonstrable injury to the coats of the eye or the appearance of injury elsewhere. These cases were due to concussion, even through the soft tissues. The eye in this case would probably be blind, and in due time evidence of optic atrophy would appear.

Donald H. O'Rourke,
Secretary

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## OMAHA AND COUNCIL BLUFFS OPHTHALMOLOGICAL AND OTOLARYNGOLOGICAL SOCIETY

November 16, 1927

Dr. J. C. Davis, president.

### Operation for ectropion from facial paralysis

Dr. Lemere showed a case of double facial paralysis with a resulting ectropion of the lower lid in which he had done a Kuhnt-Szymanowski operation on one eye. He described the operation and suggested its advantages in similar cases.

*Discussion.* Dr. Banister stated that this operation was recommended for senile ectropion but he believed it was also as good in paralytic ectropion. He described an operation recently proposed by Dr. Wheeler.

Dr. Harold Gifford remarked on the good cosmetic result obtained. He suggested that something should be done to protect the cornea, however, as the closure of the lids was not complete. He stated that in ordinary senile ectropion the use of a Thiersch graft as an insert below the lid margin and pulling the lower lid up toward the brow with three sutures usually gave a perfect result.

**Persistent paralysis of accommodation after homatropine**

DR. LEMERE reported a case of paralysis of accommodation which had lasted for two months from the use of homatropine for refraction.

**Sympathetic ophthalmia**

DR. CHARLES SWAB presented a case of sympathetic uveitis in which the earliest symptom was a marked refractive change. (Paper to be published in full in this Journal.)

*Discussion.* DR. HAROLD GIFFORD stated that he had never seen so marked an increase in myopia in early sympathetic ophthalmia. A decrease in vision was a common early symptom, but usually there was some congestion at this time or soon afterwards. He believed that the use of foreign protein and removing all foci of infection helped greatly in this case in addition to sodium salicylate. He had recognized the possible importance of focal infections as long ago as 1900 and had tonsils removed in cases of sympathetic ophthalmia at that time. He had also recognized the possibilities in the use of foreign protein therapy and had used what was then called phylacogen in a case. He believed that sinuses were equally important and that all sinuses should be carefully investigated. He emphasized the value of large doses of sodium salicylate, one hundred and eighty to two hundred grains a day being given if necessary. An increase of the ordinary dose of one hundred and twenty grains to these higher doses would sometimes bring relief when the ordinary dose had failed. He had not had much experience with salvarsan but believed mercurial inunctions should be used in all cases. The use of mercuric cyanide by vein is recommended by Fromaget. Dr. Gifford had had no experience with this nor with some of the substitutes for sodium salicylate such as benzosalin as used by Stock. He mentioned autohemotherapy as suggested by Villa Coro and also antidiphtheric serum.

December 21, 1927.

DR. J. C. DAVIS; president

**Paresis of inferior rectus**

DR. ALEXANDER YOUNG presented a case of paresis of the right inferior rectus and demonstrated a simple chart which he said was of assistance in determining the paretic muscle. The cause of the paresis in this case had not been determined.

**Exophthalmos associated with hyperthyroidism: Special technique for closing lids**

DRS. HAROLD GIFFORD and JAMES M. PATTON showed a case of exophthalmic goiter in a young colored man. The amount of disturbance of motility was unusual in this case, as neither eye could be moved more than a few millimeters in any direction. Both corneæ were rough and the conjunctivæ congested. During a few days, while the patient was waiting for an operation, the lids were closed by means of ordinary dress hooks fastened firmly in a collodion dressing in the upper and lower lids and tied together by thread. In the case of the left eye, where the exophthalmos was not so marked, the hook was placed near the outer angle, producing only a partial closure of the lids.

**The internist's relation to the eye, ear, nose and throat specialist**

DR. ADOLPH SACHS emphasized the necessity of close cooperation between the internist and the specialist. Beside a regular report of his findings, the specialist should try, where possible, to give an opinion as to whether or not his findings would account for the symptoms of which the patient complained. The various types of headache and vertigo were discussed, with their causes. Regarding focal infection, Dr. Sachs warned the specialist of the danger in suggesting possible sources of pathology to nervous patients, as this often put the internist, who had a better understanding of the whole condition, at a disadvantage.

*Discussion.* DR. HAROLD GIFFORD mentioned the frequency of the cases with so-called migraine which were relieved by proper care of intestinal sta-

sis, the most important factor in which he believed was the use of large doses of vaseline.

DR. BANISTER described his own case of migraine, in which no headache was present but definite scintillating scotoma with homonymous hemianopsia. In this case the condition was due to intestinal stasis and was promptly relieved by the proper attention to this.

S. R. GIFFORD,
Secretary

## ROYAL SOCIETY OF MEDICINE, LONDON

### Section of Ophthalmology

January 13, 1928

MR. ERNEST CLARKE presiding

### Bilateral papilledema due to cerebral tumor

MISS M. DOBSON presented the case of a woman, aged 42 years, whose occupation was that of clerk. In August, 1927, her left breast was removed for malignant disease. Shortly after that operation she began to suffer from deafness and persistent headache, the pain extending to the neck. Until this time her eyesight had been normal, but on November 10 she suddenly became totally blind, though she only remained so for a few moments. Since that date there had been a gradual deterioration of vision. At present the headache was mainly frontal; she had exacerbations, with sickness, several times a week. There was no paralysis of extraocular muscles; the pupils were semidilated, and only accommodated to a strong light. The optic nerve head was found to be very edematous, and the veins of the fundus were much distended. The macular region was edematous, the fovea showed white spots of exudation, and there were spots tracking towards the temporal side of the disc, while the macular area was thrown into folds, with striate hemorrhages in between. The fellow eye was much the same. There were no localizing symptoms. The exhibitor thought it very likely that the cerebral tumor was malignant, in which case she asked whether trephining to relieve the headache or to restore some sight was desirable.

*Discussion.* MR. HARRISON BUTLER thought the results of operation for removing cerebral tumors by ordinary surgeons were usually tragic, and, as this tumor was probably malignant, it did not seem justifiable to operate merely to relieve sight, though something operative might be done to relieve pain.

### Tumor in anterior chamber with recurrent hyphema

MR. G. W. KENDALL described the tumor as anterior to the iris, and vascular-looking. Beneath it was a posterior synechia. After the hemorrhage had been absorbed, the disc could be seen to be cupped and atrophic. It seemed to be a solid tumor and had remained the same for a very long time; the patient said he had had a red spot on his eye for forty years.

*Discussion.* MR. M. S. MAYOU said he regarded it as belonging to the type of nevus met with in the uveal tract. A few cases had been reported to have occurred in the choroid. He did not know of a vascular one occurring in the iris before.

### Factors controlling intraocular pressure

MR. W. DUKE-ELDER read a paper giving a preliminary account of a research he had been carrying out at University College on this subject. It had been generally recognized until recently, he said, that the only mechanism controlling the preservation and variation of the intraocular pressure was the blood pressure. He set out in this communication to show that a number of other factors took part in this control.

It was a fundamental matter whether or not the aqueous humor was a secretion. Seeing that the aqueous was in complete thermodynamic equilibrium with the capillary blood, and that he could not get any evidence of secretory activity, it was reasonable to regard the fluid as a dialysate. The

state of equilibrium with the capillary blood was a dynamic one, and permitted a continual metabolic interchange or a thermal and pressure circulation. Thus the intraocular pressure was maintained at the equilibrium level between the pressure of the capillaries on one hand and the difference in osmotic pressure between the capillary plasma and the aqueous humor on the other. Being maintained at this level, it might be varied, in the first place, by altering the equilibrium level, that is, by varying the blood pressure in the capillaries, by changes in the arterial or venous pressure, or by changes in the capillary circulation itself. In the second place, it could be varied by altering the colloidal osmotic pressure of the blood or of the aqueous, or by varying the volume of the vitreous and lens. The influence of each of those factors could be brought out experimentally, and many of them appeared to have some effect in determining the variations of pressure met with clinically. Changes in the volume pressure were normally compensated within the limits of the safety valve action at the canal of Schlemm; it was especially when the means of exit in this region were impeded that, under clinical conditions, persistent rises of pressure were evident.

*Discussion.* Sir John Parsons characterized the work as overwhelming and of very complex character, and expressed his satisfaction that the mechanical interpretation which other workers, including himself, arrived at was not altogether without support in this most recent piece of work. It showed the great advances which had been made of late in the domain of biochemistry. No matter how much biochemistry and other branches of science progressed, the knowledge was of little value unless someone was found capable of applying it properly.

Sir Charles Martin also made congratulatory remarks. He would like Mr. Duke-Elder to devote attention to ascertaining the exact physiological conditions which determined the exit of aqueous humor from the eye; he did not think that was such a simple matter as it was generally assumed to be.

Mr. Treacher Collins found it difficult to look upon the fluid in the interior of the eye as a stationary fluid, or even as being in a state of equilibrium. A matter which was assumed in the paper was that there was a difference in the degree of permeability of the capillaries in different parts of the body, but the speaker thought that was no more than an assumption. He described some work he did on rabbits in a somewhat similar enquiry a number of years ago, and he suggested to Mr. Duke-Elder that the interchange which went on in the fluids of the eye was chiefly an interchange between the blood vessels of the ciliary body and the aqueous humor, and, if that were so, the interchange which took place was not only a question of permeability of the capillaries, but also that of the cells lining the ciliary body. It was not likely that fluid would pass through two layers of cells without that fluid undergoing some change in the process, perhaps amounting to a suppression of its constitution in some respects.

Mr. Harrison Butler said he thought there was some clinical evidence that, though the circulation in the eye was very slow, a circulation existed there. When fluorescine was introduced into the posterior chamber, it was not until about six hours afterward that it began to appear in the anterior chamber.

H. Dickinson,
Recorder.

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## KANSAS CITY EYE, EAR, NOSE AND THROAT SOCIETY

January 18, 1928

Dr. Alvin Lorie presiding

### Visual fields

Dr. Morris H. Clark presented this subject with slide illustrations of normal and pathological visual fields under varied conditions. Factors affecting normal fields were enumerated as follows:

1—Character of the light
2—Strength of the light
3—Size of target
4—Color of the target
5—Retinal fatigue
6—Nervous element of the individual patient
7—Patience of the operator

The fields were shown to be proportionately decreased as objects were reduced in size, using the same light. This applied to the large perimeter as well as to the stereocampimeter.

These facts were brought out merely to urge the necessity of some definite universal standardization in the technique of field taking. Many excellent articles and much good work had been wasted in taking visual fields in so far as transmitting information to others was concerned. For, although the operator might from experience know the normal for his own apparatus, light and technique, yet, unless the full statement of these factors accompanied each chart, the latter was practically useless to those unacquainted with these details.

Attention was called to the increasing precision of localizations and diagnoses of certain brain and other nerve disturbances by means of visual field study.

A hope was expressed that the Ophthalmological Society would adopt a definite standardization of color, equipment, and technique.

*Discussion.* Dr. Joseph Lichtenberg said that there were definite standardizations which were adopted by makers of various instruments. However, a universal standardization was much needed.

Dr. McAlester summarized the history of field taking from the time of Graefe to the present. He then made special reference to the Ferree-Rand perimeter, stressing the principles of illumination and color.

Morris H. Clark,
Reporter.

## LOS ANGELES COUNTY MEDICAL SOCIETY

### Eye and Ear Section

January, 1928

Dr. Bertram Davies, president

**Vernal catarrh**

Dr. Trainor presented a boy with vernal catarrh whose lids he had treated with pure trichloracetic acid once each month since September, with a marked diminution in the number of granulations and an increased comfort for the patient.

*Discussion.* Dr. Boyce said that he had tried trichloracetic acid on a number of patients with trachoma with no beneficial results.

Dr. Irvine emphasized the tendency toward recurrence of the granules of vernal catarrh after removal in any fashion. He had had them recur in three months after removal with carbon dioxide snow. He considered vernal catarrh a manifestation of an allergy, thought one should seek the cause, and was doubtful as to whether the use of trichloracetic acid would be of permanent benefit. The best treatment in his experience was conservative and symptomatic to keep the patient comfortable. The disease was self-limited.

**Retinal and orbital hemorrhage**

Dr. Boyce presented a patient who had a cut through the right upper lid in November, which was sutured and was followed by marked exophthalmos in two hours. Four days later there was a hemorrhage covering the disc. There was now an upper nasal quadrant defect in the field; visual acuity of 10/200; and a paralysis of the inferior rectus and inferior oblique. The left eye had optic atrophy from an injury in childhood.

**Brain abscess**

Dr. Leon Myers presented two brains, one showing a cerebellar abscess and the other a cerebral abscess. Both of these patients had shown a conjugate deviation of the eyes. He emphasized the fact that either cerebral or cerebel-

lar abscess might cause conjugate deviation, but that if one looked carefully and found a widening of one palpebral fissure or indication of facial weakness, it indicated that the abscess was cerebral with involvement of the motor facial areas. He made the differential diagnosis on this point in the subjects presented, as the one with the temporal lobe abscess showed widening of one palpebral fissure.

M. F. WEYMANN,
Clerk.

## SAINT LOUIS OPHTHALMOLOGICAL SOCIETY

January 27, 1928

DR. JOHN GREEN, JR., presiding

### Intraocular hemorrhage; hypertension; operation

DR. JOHN GREEN presented Mr. B. H. F., aged 27 years, who had received a smart blow on his left eye by a small rubber ball. Two days later there was sudden blurring with visible hemorrhage in anterior chamber. The third day, vision equalled fingers at eight inches, tension was normal and there was massive hemorrhage almost obscuring the iris. One hour after atropin was instilled pain increased and fresh hemorrhage was noted. Tension rose to +2, with severe pain. Anterior chamber was tapped but by morning tension was again plus and pain severe. Therapeutic measures included dionin instillations, cold packs, subconjunctival injection of sodium citrate (6%); intraorbital injection of novocain and adrenalin and instillations of aminglaucosan. Tension rose to 67 mm. of Hg (Schiötz) and pain continued till the tenth day.

A large incision under a preformed flap was made with keratome and scissors. Iris prolapsed and was excised. Irrigation of anterior chamber dislodged and removed a large clot and left anterior chamber clear, pupil dilated. Pain and tension were relieved. Present state was satisfactory after two months. Pupil was slightly dilated and there was some flattening and loss of pigment of iris at four o'clock; slight iridodonesis; some vitreous shreds. The eye was quiet and vision was 6/6 and Jaeger 1.

### A consideration of intraocular foreign bodies

DR. WILLIAM F. HARDY presented a paper on this subject published elsewhere in this Journal (p. 371).

*Discussion.* DR. HUGO REIM said that each case was a law to itself but that he had found removal through scleral incision less destructive.

DR. M. H. POST urged x-ray localization wherever possible before applying magnet.

DR. JOHN GREEN described a case of total traumatic aniridia incident to the removal of a foreign body 2.5 by 2 by 4.5 mm. which had gone through sclerocorneal limbus, iris, and lens into vitreous. It was withdrawn through entry wound only by direct application of magnet tip to wound. All of iris came with the foreign body. The wound, covered with double conjunctival flap, had healed but the eye remained irritable after three weeks with the outcome still in doubt, although the tension was normal. He also mentioned a case of retained copper fragments in both eyes with 6/10 vision after removal of traumatic cataract, stating that after three years the fragment no longer cast a shadow on the x-ray plate.

DR. HARVEY LAMB had cared for two cases of steel in the lens, both seen months after injury, having had no reaction, the patients coming because of dim vision. The foreign bodies were easily seen by oblique illumination and were removed through corneal incision by hand magnet. Linear extraction of lens later gave good results.

DR. LEO MAYER told of seeing the giant magnet used to draw foreign body into anterior chamber whence it was removed through a corneal incision by means of a hand magnet. This was in the Lariboisière Hospital in Paris.

DR. LAWRENCE POST said that attempt to draw the foreign body into the anterior chamber was the method in the British army in France. Sympathetic ophthalmia was rare. He felt that the

antitetanic serum used might have been an important factor. He still used antitetanic serum in most wounds because of the rare danger of tetanus (two or three cases reported yearly) and for its possible aid as a foreign protein in preventing sympathetic ophthalmia.

Dr. William H. Luedde suggested the use of rubber-covered iron cable to reduce the giant magnet to the capacity of a hand magnet. He said a quarter inch cable a foot or so in length gave about double the strength of the hand magnet. Dressing forceps of different lengths added to the magnet tip gave similar results. The danger of sudden magnetic pull was thus controlled both as to direction and force.

Dr. Hardy, in closing, referred to a case with three retained copper fragments in one eye and two in the other. The patient had been blind several months, recovering 6/5 vision, after discission followed by absorption of the lens. The second eye still had a thick pupillary membrane. There had been no evidence of disintegration of the copper after four years.

Dr. Shahan had had two cases of intraocular foreign body within the last two years which were of special interest. In one an attempt had been made to remove a steel fragment without any effort at localization. An incision had been made through the sclera behind the ciliary body. Magnet failed to withdraw the foreign body. Later a localization showed the foreign particle to be in the upper part of the ciliary body. Patient was permitted about two weeks to recover from the unsuccessful attempts before any further operative procedures were adopted. At this time a hand magnet was used to stroke the foreign body through the ciliary body toward the anterior chamber. These stroking efforts were always attended with considerable pain reaction. Near the end of the two weeks a sharp metallic point was observed in the filtration angle. A small corneal incision was made near this and a steel particle removed with little effort and no permanent damage, patient having normal vision a year later.

The second case came from the same country town and efforts to remove the foreign body had been made by the same men without localization. These efforts were unsuccessful and the patient was treated expectantly. Within two months he developed sympathetic ophthalmia and both eyes were lost. Dr. Shahan had also had two cases in which the lens was punctured by particles of steel and the steel removed, one from the vitreous and one from the lens, without subsequent development of cataract.

The only copper case he recalled was one in which a fragment of dynamite cap could be seen lying in the lower portion of the vitreous for four and one-half years. After this time copper salts began to be deposited in the lens and vitreous and the eye became so irritated that it had to be removed.

**Sporotrichosis of the eyelid**

Dr. B. Y. Alvis read a paper on this subject published elsewhere in this Journal (p. 381).

Max Jacobs,
Secretary.

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## GRAEFE

Birth, work, death, oblivion! Thus might run an epitome of the lives of most of those who have contributed in an important way to the happiness and advancement of the world. For the most part we accept, with not enough of recollection and appreciation, the fruits of the labors of our predecessors in every field of endeavor. From their shoulders we step to greater heights, but with too little realization of the thought and effort by which they raised us to our position of advantage.

The twenty-second of this month will be the one hundredth anniversary of the birth of Albrecht von Graefe, an ophthalmologist who, as few others have done, made history in his chosen field, and who labored ceaselessly for science and the healing art, to come, after a bitter struggle with ill health, to a premature grave. He died in 1870, forty-two years old—an age at which very few leading professional men of today have reached the zenith of their fame and influence.

The professional life of Graefe began at a most significant point in the development of ophthalmology. After undergraduate years in Berlin, and two years spent under great surgeons in several of the capitals of Europe, he met in Vienna a young bookseller, a former schoolmate in Berlin, who said to him: "It will interest you to hear, dear Graefe, that when I reach Berlin and take over the book concern which my father has bought for me, I am to start my new publishing business with a very interesting little work by the Königsberg professor of physiology, Mr. Helmholtz, on a new eye instrument—called the ophthalmoscope." Many of Graefe's earliest days of practice in Berlin were devoted to earnest study of the new instrument of which he received a very early sample from it inventor. His remark upon seeing the fundus details for the first time is typical of the sensation of thousands of students of ophthalmology since that day: "Helmholtz has unlocked a new world for us."

An address by Donders points out that some of Graefe's contemporaries were disposed to attribute his eminence in large part to his fortunate relation to the invention of the ophthalmoscope; but Donders remarks

that those who so judged ran the risk of overlooking Graefe's true greatness. He showed special merit in the field of ophthalmoscopy. But, says Donders, "his chief services . . . . lie outside the sphere of the ophthalmoscope, and without this instrument he would have surpassed his contemporaries still more than with it."

"Autres temps, autres mœurs"; other times, other customs. Some of the details of the machinery employed by Graefe to gather to himself a practice in Berlin would perhaps hardly commend themselves to the formal code of medical ethics in the United States of today. After his two "wanderyears," with their rich fund of experience under such men as Arlt in Prague, Desmarres and Sichel in Paris, and the two Jaegers in Vienna, young Graefe rented in one Berlin house two rooms for consultations and operations, and in another house two rooms for the care of operated patients, and published daily in the most widely read Berlin newspapers an announcement that patients without means would be treated by Dr. von Graefe at such and such a street without compensation.

He became "Privatdozent" at the Berlin university in 1852, presenting a thesis "on the action of the ocular muscles." Early in his career he began to receive pupils from all parts and to give daily instruction in his private clinic. He opened his polyclinic with one patient on the first of November, 1850, and not quite four years later many thousands of patients had furnished him with enough material to enable him to found independently a new eye journal. Within a few years, the number of patients annually attending his private clinic amounted to ten thousand.

The first volume of Graefe's "Archiv für Ophthalmologie" appeared in the winter of 1854, dedicated to Friedrich Jaeger. The first section of the first volume, consisting of 480 pages, is, with the exception of 86 pages, filled with Graefe's own writings. The second section of the first volume appeared in 1855 and contained Helmholtz' important work "on the accommodation of the eye," as well as Donders' "contributions to the pathologic anatomy of the eye" and "studies of the visible phenomena of the circulation of the blood in the eye," and papers by Arlt and Liebreich.

Graefe's name is associated with certain improvements in the technique of linear cataract extraction, and he wrote extensively concerning the surgical treatment of strabismus. In Berlin, almost up to that time, reclination or depression of the cataractous lens had been the customary operation for senile cataract, in spite of Arlt's brilliant work in Prague. Graefe took a very active part in popularizing the use of iridectomy in cataract extraction. But his epoch-making contribution to the surgery of the eye was the brilliant discovery that very many cases of glaucoma could be cured by iridectomy.

Donders remarks: "Graefe had been anticipated more than thirty years before by Mackenzie, who, however, had not followed up the practice so as to establish it; and his track, long neglected, had remained unknown to our Graefe. To have followed the track to the goal, and to have laid it open to others, is the immortal merit of Albrecht von Graefe."

It is interesting to note that for the first few years of study with the ophthalmoscope the impression prevailed that what was later known as the glaucoma "cup" was an elevation. Thus an early essay by Graefe in his "Archiv" says: "The optic nerve entrance in almost its entire area forms a markedly roundish hill, and only a narrow peripheral zone lies at the natural level of the retina, and bounds the hill like a ring placed around its base." But it was not long before Graefe's observations with the ophthalmoscope led him to the conclusion that the glaucomatous optic nerve did not protrude but was excavated.

Michaelis describes as follows the routine of Graefe's working day from 1850 to the year of his marriage, 1862: During the morning he wrote and dictated. Between eleven and twelve

a.m. he visited the clinic and private patients. Then followed consultations and operations in the city. After a light meal in the clinic, he conducted his polyclinic, operated, and visited previously operated and difficult cases. Private consultations at his residence regularly occupied the time until ten p.m., and not infrequently until midnight. After taking a frugal supper he ordinarily drove once more to the clinic, again to convince himself of the condition of the severest cases, and only after this was done did he retire for the night's rest.

His physical constitution had never been robust, and it is scarcely surprising that in 1861 he developed repeated attacks of pleurisy, soon definitely diagnosed as tuberculous. His marriage was postponed, but took place in 1862, after a partial recovery. From this time until 1870, the year of his death, he fought a losing battle with pulmonary tuberculosis. For the last year of his life his activities were maintained by virtue of repeated injections of morphine. "Three or four times in the course of a morning he interrupted his discourse at the Charité eye clinic, went out, gave himself an injection, and then continued his discussions as though nothing in the least had happened."

In 1886, by public subscription, the Graefe medal was instituted in perpetual memory of this brilliant surgeon, to be awarded every ten years by the German Ophthalmological Society at its annual meeting in Heidelberg, to the man of any nationality who might be designated as having rendered the greatest service to ophthalmology. The first presentation was made to Helmholtz, at the close of the Quincentenary Festival of the University of Heidelberg. The incidental address on the life and scientific work of Graefe was delivered on that occasion by Donders, who, in addition to his own pioneer work in refraction, had been for many years an intimate friend of Graefe and joint editor of the Archiv für Ophthalmologie. *W. H. C.*

## AN EYE HOSPITAL AND RESEARCH INSTITUTE AT WASHINGTON UNIVERSITY IN SAINT LOUIS

For many years there has been a great need in this country for ophthalmic centers—places which offered opportunity for a broad and finished training. Each such center should possess a large eye hospital, closely associated with a first class medical school, a large and varied out-patient clinic, well equipped research laboratories with experts in charge, and a full-time staff of teachers prepared to give instruction in every phase of ophthalmology. Due credit must be given to the splendid facilities of many institutions in this country and to the courses offered by several medical schools, but there has always been a lack of men who, unhampered by the necessity of private practice, could give their time to teaching and research. Without such a staff, it is obviously impossible to provide ophthalmic instruction in any one institution in a comprehensive way.

The first step toward establishing an ophthalmic center in the United States is now being made possible by the Wilmer Foundation at the Johns Hopkins Medical School in Baltimore. The entire medical world is looking forward to great things from this institution, which is so fortunate, in its beginning stage, to be under the direction of Dr. Wilmer himself.

American ophthalmologists will rejoice to learn that a second comprehensive ophthalmic center is now being started in Saint Louis. Through the generosity of the late Mrs. William McMillan of Saint Louis, the sum of $1,200,000 was recently left by her will to Washington University for the establishment of the "McMillan Eye, Ear, Nose, and Throat Hospital." This sum is sufficient for the construction and the equipment of such a hospital but is inadequate for maintenance. The Washington University Corporation has therefore decided to construct first an ophthalmic hospital, and to

build the otolaryngological section as soon as further funds are available.

The McMillan Fund is also insufficient for maintaining an adequate full-time clinical and teaching staff and research workers. To meet the need for such an endowment fund an additional sum of $800,000 is now being raised, and it is confidently expected that the amount will be in hand by the first of June.

Washington University has been extraordinarily fortunate in securing Dr. Harvey J. Howard as Professor of Ophthalmology and Director of this new enterprise. Dr. Howard is eminently fitted for this task. He has had an extensive experience in clinical and surgical eye work, both in this country and in China. He is a man in the prime of life who has always been devoted to research, and who has made several original contributions, some of them of great value, to general medicine as well as to ophthalmology. He has had a large teaching experience both in undergraduate and postgraduate work as professor and head of the department of ophthalmology in the Peking Union Medical College, where he worked out from the beginning the problems of construction, administration, and development of a large ophthalmological unit erected under his supervision and associated with a modern medical school and hospital.

Dr. Howard is already working with the architects on the plans for a sixty-bed eye hospital which, in addition to forty ward beds, will provide twenty private and semiprivate rooms; also a complete system of out-patient clinic rooms, several operating rooms, and a number of research laboratories. The institution will be modern in every respect and will have a complete equipment for clinical and research purposes. Several full-time men will be secured to assist in conducting such divisions in the institution as pathology, bacteriology, biochemistry and physiologic optics. Furthermore, the new institution will collaborate with such other departments in the Medical School and the College of Washington University as physiology, biochemistry, physics, and biology in the study of some of the many problems in ophthalmology which still remain unsolved. Moreover, the new institution will attempt to correlate with ophthalmology the most recent advances in the fundamental and medical sciences. Situated in a city of nearly a million people and drawing from a thickly populated surrounding territory, there is undoubtedly a wealth of clinical material at hand.

In order to attract the scientifically inclined to do original investigation in ophthalmology in the new institution, each division of research will have several small research rooms for individual workers. Young physicians will be encouraged to come for one, two, or more years, working either independently or under the direction of members of the full-time staff. In order that the hospital may be of the greatest possible service to the community and to the profession, the private and semiprivate rooms will be open to all recognized ophthalmologists in Saint Louis and its vicinity. The ward beds will be reserved primarily for the purposes of teaching and study.

No definite plan of postgraduate teaching has yet been evolved by the new chief, but it may be stated that no attempt will be made in Saint Louis to duplicate the good teaching offered in other centers. An effort will rather be made to fill in the gaps that now exist in the teaching of ophthalmology in America. Ultimately, perhaps, the new institution will be able to offer such a variety of courses; through the aid of the men doing private practice in ophthalmology in Saint Louis, that any oculist who desires further training in any special branch may receive it.

All these plans are ambitious and ideal, and much time will undoubtedly be required to bring them to complete fruition, but the opportunity exists, and in such institutions as the one now projected in Saint Louis lie our best hopes for new and finer accomplishments in ophthalmology. *L. T. P.*

## SIZE OF DETAILS SEEN WITH THE OPHTHALMOSCOPE

Of those who daily use the ophthalmoscope few realize the minuteness of the retinal vessels with which they are so familiar. The largest primary branches of the retinal artery, in most eyes, have a diameter of about one-tenth millimeter. The diameter of the smallest capillary branches visible with the ophthalmoscope by the direct method may be judged by the minimum separation of two points in the retina that can be distinguished as separate points. The "minimum separabile" angle is generally taken as one minute. This is the foundation of the Snellen five minute test letters which are held to indicate standard vision. There are many eyes that can distinguish a smaller separation than this. Most ophthalmologists have met with a few patients who could read 20/10 of the Snellen scale; and one case is on record in which the vision was 40/10. On the other hand, some who have eyes in most respects good, and who have used the ophthalmoscope, have found they did not have quite standard vision, and could not see as much as 20/20.

Assuming one has standard vision, 20/20, how fine details will he be able to see with the ophthalmoscope by the direct method, through clear media? The retina is a little more than fifteen millimeters from the posterior nodal point of the average eye. At this distance, to subtend the angle of one minute the separation between two points should be 4.35 microns, a little more than half the diameter of a blood corpuscle. If the observer saw two points of light against a black background, an eye with standard vision could distinguish that they were separate points in the retina, even if they were as close together as this.

But we never look at such points in the fundus of the eye. The illumination is relatively feeble. The contrast between the details it is desired to see and their background is not so striking. Object and background are often different shades of the same color, there may be imperfect focusing, and some movement may cause decided indistinctness of outline. Because of these handicaps to vision the size of the smallest details distinguishable must be appreciably larger than the theoretical limit above indicated.

The refraction of the eye examined determines the magnification of the fundus details and influences their visibility. It may vary between ten and twenty diameters. In hyperopic eyes the correcting lens helps to magnify, while in myopic eyes the correcting lens diminishes the apparent size. This influence also affects the apparent size of details seen in the vitreous. Such factors impair the value of any scale adapted to measuring the fundus images. They limit the practicability of making exact measurements with the ophthalmoscope. Our best notions and most valuable records are secured by comparing the apparent size of details in the fundus with that of the most constant of the structures that are seen with the ophthalmoscope, especially the diameter of the optic disc and the primary branches of the retinal artery. Exact size cannot be known, but comparison with the available standard objects and records based on such comparison will give definiteness to our impressions of size and make them of greater practical value. *E. J.*

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## A DEGRADATION OF POPULAR JOURNALISM

The degradation of a noble instrument to base purposes is particularly exemplified by some forms of popular journalism. The profits of a cheap and widely circulated magazine are derived from its advertising pages, and a large circulation is most important, not because of subscriptions, but because of the advertising receipts. Therefore not what is true, not what is educational, not what is progressive determines the basis of editorial policy and the character of the reading pages, but what is most sensational, what will create notoriety, and what flatters the vanity of mankind and womankind.

The craze for notoriety, rather than the desire for truth, is only too well illustrated in the remarkable proposal made by McClure's magazine to the professor of ophthalmology in a western medical college, of which details are given in the correspondence reproduced on page 405. An intelligent editor should be able to distinguish between scientific theory which is open to argument and established scientific fact which is no longer debatable among those who possess a reasonable amount of scientific education. It is laughable to suggest to a reputable ophthalmologist that he shall first undertake to answer a pronouncement by one irregular physician and shall then allow the dispute to be umpired by a closing speaker whose knowledge and purposes are just as questionable as those of the first.

*W. H. C.*

## BOOK NOTICES

**Experimental Oogtuberculose en de behandeling met sanocrysin.** (Experimental ocular tuberculosis and treatment with sanocrysin). C. Winkler Prins, Jr. Paper, 88 pages, six plates (four in colors), and five charts. Amsterdam, Van Dishoeck te Bussum, 1928.

This is a thesis presented by its author as a candidate for the medical degree in the University of Amsterdam. It reports the effects of treatment with sanocrysin upon the ocular lesions of tuberculosis produced experimentally in the eyes of rabbits. In the majority of rabbits experimented upon the inoculation with tubercle bacilli proved fatal. Lesions of the anterior chamber or cornea were produced in many, but the results of sanocrysin treatment seemed negative.

The first chapter reviews the work on experimental ocular tuberculous lesions of the eye in rabbits, reported by previous observers. In this review justice is done to the observations of Finnoff and O'Rourke that have been reported in this journal. The color plates reproduce the appearances of corneal lesions in four of the eyes. There are also four representations of microscopic sections of kidney and liver and cornea; and also stereoscopic plates of corneal lesions. *E. J.*

**Der Glasbläserstar** (Glassblower's cataract. Ernst Kraupa (Brünn). 119 pages, 24 illustrations in the text. Paper covers, 13.50 marks. München, J. F. Bergmann.

In spite of the existence of various regulations for the protection of glassblowers from industrial disability, there had hitherto been no adequate scientific treatment of the questions involved. The present work is intended to supply this deficiency, and is the result of studies made by the author as ophthalmologist at Teplitz-Schönau, in the center of the Czechoslovakian glass industry, where the author first described certain forms of destruction of the lens capsule due to exposure to the furnace. The drawings of the various types of cataract with which the volume is concerned are splendid pieces of work by Weran, a painter in Prague.

The author's chapter on the literature of glassblower's cataract points out that the idea that fire is injurious to the human eye dates back to early popular experience, and was first made the subject of medical writings at the beginning of the eighteenth century. The numerous authorities quoted differ widely in their conception of the morphology, statistics, pathogenesis, and etiology of cataract formation, and agree only in the opinion that work at the fire does produce the injury. According to Hirschberg, glassblower's cataract resembles senile cataract.

Of the twenty-six cases described by the author, the opacities in the first fifteen involved only the posterior pole of the lens and did not affect the visual acuity, whereas in the remaining eleven cases the vision was diminished. However, the essential character of the two classes, that in which vision is not and that in which vision is affected, is the same. They represent different stages of the same process. From the

posterior lamellar opacities of old age these opacities are distinguished by their central position, a lack of tendency to extend toward the periphery, and a decided tendency to advance into the anterior cortical layers.

The author discusses the subtle changes in the anterior lens capsule which he has observed especially in glassblowers but also in typical senile cataract. The course to be adopted in the treatment of these cases does not differ from that of ordinary senile cataract. The mere existence of opacity at the posterior pole does not ordinarily present an indication for operative interference. From the ophthalmologist's standpoint, the results of operation for glassblower's cataract are nothing short of ideal. Out of ninety-one operations, the author obtained in seventy-one eyes visual acuity of 1.0, in five eyes vision of 0.5 to 0.9, in sixteen eyes vision of 0.1 to 0.4 (including five with secondary cataract which would be capable of improvement), and in five eyes less than 0.1, and he lost one eye through suppuration. The author's experience, together with a consideration of the statistics published by others, leads him to the conclusion that cataract is about four times as common in glassblowers over fifty years of age as in the general community after this age.

Various possibilities as to the exact etiological factors involved are discussed, without any very definite conclusion. Dealing with the possibility of protection by special types of spectacle lens, the author finds the main difficulty to be that of convincing the worker of the necessity for wearing spectacles. A final chapter deals with the problems of industrial compensation in this industry. Operation should be required before compensation is finally adjudicated.

*W. H. C.*

**Uber die Darstellung der Hornhautoberfläche und ihrer Veränderungen im Reflexbild** (Representation of the corneal surface and its changes in reflex image). F. T. Fischer (Leipzig, Germany). 84 pages, 112 reproductions in the text. Paper covers, price 10 marks. München, J. F. Bergmann.

By means of special photographic apparatus, the author, whose work was supported by the Notgemeinschaft der Deutschen Wissenschaft, undertook to find a new way for representing the surfaces of the eye and their changes. The method employed has some analogy with the well known procedure for studying anomalies of corneal curvature with Placido's disc and Helmholtz's ophthalmometer. The reflecting surfaces available for such study include only the surface of the film of tears and the surface of the cornea.

A chapter is devoted to study of the reflex image under the influence of pharmacodynamically and chemically active materials. Many excellent photographs reproduce the various fantastic patterns obtained by different means. Some of the work was done on human beings, and some on rabbits. The pathological conditions represented include corneal erosion, dendritic keratitis, eczematous keratitis, and epithelial dystrophy.

*W. H. C.*

## CORRESPONDENCE

### "Eye physician" or "Eye surgeon"

*To the editor:* The exception taken by Dr. Wilder to the use of the term "eye physician" as more accurately describing us to the general public than the term oculist or ophthalmologist, commonly in use, seems to be justified not alone on the grounds upon which he bases his position but for other reasons also.

The motive underlying this suggestion of the Guild of Prescription Opticians is the desire to convey to the general public the conception that eye disturbances of any kind come within the province of medicine, and should be dealt with only by those having special medical training.

An interpretation may easily be put upon this term which would prove very influential in defeating its purpose.

The state has licensed men, who have no medical training, to test eyes

for the purpose of fitting glasses, but not to deal with diseased conditions or to use drugs.

It has also licensed other men to practice medicine, i.e., to deal with diseases or any departure from the normal, congenital or acquired.

It is easy to see that representations may be made, by those interested, that people who simply want to get glasses, or who think that that is the situation, should go to the former group, the optometrists, and only those with obvious diseased conditions should go to the latter group, the ophthalmologists or oculists. The spread of this idea would be greatly facilitated by the use of either of the terms "eye physician" or "eye surgeon."

The optometrists, still acting as tradesmen and not as professional men, advertise freely and therefore can make representations which fail to acquaint the public with a true and impartial view of the whole situation.

The ophthalmologists are unable on ethical grounds to enlighten public opinion by any method resembling advertising.

The terms "ophthalmologist" and "oculist" suggest no such limitation as the terms "eye physician" and "eye surgeon." An improvement in the situation must depend upon a more universal understanding of the meaning of the former terms, as inclusive of optometry and all branches of ophthalmic science, and upon a realization that no eye problem can be dealt with intelligently without a good knowledge of general medicine.

It would seem that in this situation lies a great opportunity for the Guild of Prescription Opticians to enter on a definite campaign of education as to the legitimate fields of the ophthalmologist and optician.

*F. W. Marlow.*

*Syracuse, New York.*

*To the editor:* . . . . . .

Dr. Wilder's reasons for preferring "eye surgeon" are conclusive, but only from a professional position. Both terms are objectionable: neither emphasizes superior qualifications in examining eyes for glasses, and each invites the ingenuity of so-called competitors to capitalize it for their benefit. To the uninformed it could be plausibly explained that an eye physician treated medical, and an eye surgeon treated surgical diseases of the eye, but that somebody else fitted glasses. A "name" may become a burden.

The laity cannot be relied upon to accept education in any medical subject. A representative of a manufacturing corporation complained that his company had to employ an eye physician to make their industrial examinations, and an eye surgeon to attend their injury cases! The terms oculist, optometrist, and optician were defined at the request of a patient: the physician who gave the definitions became known to that patient's friends as one who engaged exclusively in examining eyes for glasses! Again, "names" may become handicaps.

Cults will exist as long as they are patronized by patients. Much of the time spent in combating their activities might be more usefully employed within the profession. Physicians should understand that referring patients to anyone except a physician for glasses is precisely equivalent to referring them to cultists for treatment of diseases and injuries of the eyes.

A local optician states that his customers are confused by the terms oculist and optometrist, but readily grasp the distinction between the physician and the optometrist. The optician is in a position to inform the public, and if the Guild finds "eye physician" useful in its educational program we can well afford to be cordial: we are not obligated to adopt the expression for our own use. The name "physician" satisfies all our requirements: "it was good for our fathers and it's good enough for me".

*C. W. Rutherford.*

*Indianapolis*

*To the editor:* I have read with a great deal of interest the letter written by Dr. William H. Wilder on the subject "eye physician" or "eye surgeon" in the March number of the American Journal of Ophthalmology.

Dr. Wilder in his letter suggests expression of opinion from members of his profession on the subject, and while I am not a member of the profession, but a dispensing optician, I thought it might not be amiss to state my views as a member of the Guild of Prescription Opticians of America.

I was present at the convention of the Guild at Buffalo last June, and took part in the discussion which resulted in the adoption of the term "eye physician."

Our purpose was to make it plain that the profession referred to is the medical profession and not optometric or optical.

As Guild members we are committed to cooperate with the ophthalmologist in every way, not only in filling prescriptions for glasses, but in educating the public as to the need of the services of an ophthalmologist when glasses are needed. Therefore, as no refracting is done in a Guild member's establishment, we have daily opportunities of referring patients to the oculist.

Were we to mention "surgeon" instead of "physician" it might immediately suggest to the layman's mind some sort of operation, and great difficulty would be experienced in getting a prospective patient to the oculist, whereas the word "eye physician" suggests an eye specialist who has a medical degree.

To the average layman, the expressions ophthalmologist, oculist, optometrist and optician are one and the same, and it is our purpose and aim to endeavor in every way to educate the public as to the difference between these various titles and what they mean and stand for.

When we have occasion to refer patients to the proper source for refraction, we do not wish to frighten them with the word surgeon, whereas the term "physician" would give them a feeling of confidence. It is confidence we desire to inspire.

In my opinion, if we as dispensing opticians were to use the term "eye surgeon" as Dr. Wilder suggests, the effect upon the public would be such as to defeat our purpose, and I feel sure I am expressing the opinion of most of the members of our Guild.

I trust Dr. Wilder will accept this viewpoint in the spirit intended.

*J. C. Reiss.*

*Newark, New Jersey.*

**McClure's advertizes quackery**

*To the editor:* I am enclosing correspondence that has passed between the editor of McClure's and myself, which is selfexplanatory. If you see fit you may use it your correspondence columns.

The question of glasses being harmful to the human eye, as championed by Bates and his followers, is one that McClure's would like to have settled. They propose to *settle it* by publishing an article by Dr. R. A. Richardson of Kansas City, which has been put into "correct magazine shape" by Miss Jere Waid of their staff, and another written by an oculist of "first standing." These two articles to be umpired by Dr. Clayton P. Bennett of New York City. Dr. Bennett's name appears in the directory of the American Medical Association in small print, which means that he is neither a member of his county medical association nor of any of its affiliated associations. This does not speak well for Dr. Bennett's position as an oculist of "first standing."

Just why McClure's should be interested in publishing a series of controversial articles, which can only serve to advertise Bates and his followers, is hard to understand. McClure's may honestly feel that this subject is of sufficient general interest to increase the popularity of their magazine. They surely cannot believe that these articles will settle anything.

What we are interested in is whether McClure's can find an ophthalmologist of "first standing" who will be willing

to enter into this argument for the sake of seeing his name in public print. Certainly anyone who would consent to enter into this controversy would by so doing place himself in "second standing." *Melville Black.*

Copy

March, 24, 1928

My dear Dr. Black:

Dr. R. A. Richardson of Kansas City has written an article to the effect that glasses are in the long run injurious instead of helpful, and that most troubles of the eye can be cured without them. We are going to publish the article in McClure's and we want to follow it with an article by an oculist of first standing that will answer it, demolishing anything that needs demolishing, admitting any of it that needs admitting.

There will follow a third article by Dr. Clayton P. Bennett of 40 East 41st Street, New York City, as a kind of umpire, he being a physician who was raised on the Helmholtz theory but who has discarded his own glasses in favor of a system similar to Dr. Richardson's and revised by Dr. Bennett for his own use. (Dr. Bates'.)

Our intent is to give both sides an entirely fair hearing. Our interests and sympathy are entirely with the folks with the eyes, not with either side, and what we want to get for the public is the facts. Should people wear glasses or not?

It is, of course, more than a personal matter to all of us concerned. It carries with it an obligation to our fellowmen. McClure's is trying hard to have the truth brought out definitely and forcefully. It turns to you, therefore, with a question as to your position. Would you be interested in championing the cause of glasses?

Dr. Richardson's article when first submitted was far from being in correct magazine shape. It was rewritten by Miss Jere Waid, of our staff. The answering article could if necessary be treated in the same way, the finished article being submitted for the author's approval before being published under his name.

For the article in satisfactory form without Miss Waid's cooperation we would pay $300.00. If her services are involved $200.00.

The article should be approximately the same length as Dr. Richardson's—3000 to 3500 words, though it could be somewhat shorter if necessary. A diagram of the eye will be used with his article. The same diagram or another could be used in the answer. Other illustrations would also be possible.

We are very anxious to know your position in this matter. The question of Helmholtz and glasses is coming more and more before the public, and it needs settling.

Very sincerely,
*A. S. Hoffman,*
Editor

Copy

March 30, 1928

Dear Sir:

I appreciate very much being asked to reply to Dr. Richardson's article on glasses. I am sure that nothing can be settled by such controversy. The exponents of "glasses are harmful" are prompted by interests more mercenary than scientific. Nothing that I could say would influence a single person for or against their methods. A weed thrives on cultivation; so do rank sensational theories. Antagonism is what they want and provides advertising of a kind more valuable than any for which they could pay. Fads are not founded upon scientific facts and they die out in a short time, if left to prosper on their own merits.

You are playing the game of these gentlemen when you open the columns of your magazine to such controversy. I hope you will be unable to find a reputable oculist who will become a party to it.

Very sincerely yours,
*Melville Black*

## Newspaper ophthalmology

*To the editor:* Every modern newspaper in a large city has a health column, freqently conducted by an ex-health officer, in which information on medical subjects is furnished the readers. I have no comment to make on the subject of general medicine, except to say that the statements often seem to me to be prescientific, pseudo-scientific, or even ultrascientific when they assume as proven theories that are still sub judice. But, coming to our own specialty, there appear at times statements such as the enclosed gem, clipped from a Chicago daily:

Curing Nearsightedness

Miss R. A. G. writes: 1. Is there any cure for nearsightedness in a person 24 years old who has been wearing glasses for 8 years?

2. Can this be done by operation?

3. By exercise?

4. Will refraining from close work tend to improve this condition?

5. Can you recommend any exercises, or tell me where I may obtain them?

Reply

1. Nearsightedness is one condition that we tend to grow out of. When near-

sighted people become old they sometimes lay aside their glasses and read the newspapers with unaided eyes.

2. No.

3. Some physicians think exercises are beneficial to a limited extent.

4. Yes.

5. You will find a book on the subject by Bates. It is in some public libraries. The eye specialists say this book claims more than can be delivered. There are some articles in medical journals such as "Archives of Ophthalmology" and "Transactions of the American Academy of Ophthalmology," etc., but these are highly technical.

In regard to the first question and answer, it was interesting to learn that there was a tendency to grow out of nearsightedness, as I was under the impression, gathered from my own observations and from the literature, that nearsightedness, once established, tended to progress, especially in early life. Cases in which decrease of myopia apparently takes place are in all probability cases of spasm of accommodation, originally incorrectly refracted. A decrease in the anteroposterior diameter of the eyeball can be expected only as the result of compression of the ball posteriorly, such as takes place in the case of an orbital tumor. A change in the refraction of an eye in the direction of hyperopia occasionally takes place in diabetes, but these cases can hardly be spoken of as disclosing a general tendency towards decrease of nearsightedness. When myopics grow old and lay aside their glasses for reading, this is due to a receding of the near point to the far point, but the position of the latter, which depends on the refraction of the eye, does not change. The more one practices medicine, the less apt he is to say that a thing never occurs, so I will not deny that a decrease of myopia may occasionally occur, but I have never seen or heard of a case which was of a physiologic nature, and certainly there is no tendency toward it.

In regard to the second question, while no operation may be said to cure nearsightedness, the amount can certainly be decreased and the progress of the myopia sometimes checked by removal of the crystalline lens. Whether the disease or the remedy is the better for the patient is for the ophthalmologist to decide, and not for the man who must turn in a certain amount of copy each day.

General exercise, by improving the general health, may benefit the local condition and thus check the progress of myopia and perhaps reduce it slightly, but so-called eye "exercises" are a different matter. Oculists are agreed that the use of myopic eyes should be restricted as much as possible. When we consider that most cases of myopia are axial, it is hard to see how much help could be expected from ocular exercises. When it is lenticular, some improvement might be theoretically expected from exercises tending to relax the accommodation.

Inasmuch as there is a large number of people who place implicit confidence in newspaper medicine, either because of the name signed to such column, or merely because it appears in the daily press, it would seem a proper step for the American Medical Association to take official cognizance of information furnished to the laity by physicians in the columns of our daily papers. *Clarence Loeb.*

*Chicago*

# ABSTRACT DEPARTMENT

**Abstracts will be classified under the divisions listed below, which broadly correspond to those formerly used in the Ophthalmic Year Book. It must be remembered that any given paper may belong to several divisions of ophthalmology, although here it is only mentioned in one. Not all of the headings will necessarily be found in any one issue of the Journal.**

## CLASSIFICATION

1. General methods of diagnosis
2. Therapeutics and operations
3. Physiologic optics, refraction, and color vision
4. Ocular movements
5. Conjunctiva
6. Cornea and sclera
7. Uveal tract, sympathetic disease, and aqueous humor
8. Glaucoma and ocular tension
9. Crystalline lens
10. Retina and vitreous
11. Optic nerve and toxic amblyopias
12. Visual tracts and centers
13. Eyeball and orbit
14. Eyelids and lacrimal apparatus
15. Tumors
16. Injuries
17. Systemic diseases, including parasites
18. Hygiene, sociology, education and history

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### 6. CORNEA AND SCLERA

**Etiology and treatment of hypopyon ulcer.** Trans. Ophth. Soc. United Kingdom, 1927, v. 47, p. 24.

This was a discussion in which nine members participated. Among 399 cases seen by J. G. Clegg at the Manchester Royal Eye Hospital, 308 were in males, the largest number, 20 per cent, being in miners, and 15 per cent in laborers. In age 76 per cent were over thirty years; but 12 per cent were less than ten years old. In a majority of cases there was a definite history of trauma, in 26 per cent there was conjunctivitis, and in 13 per cent dacryocystitis. In treatment the importance of hypertension of the eyeball was emphasized, also measures for building up general and local resisting power of the body. As prophylactics the maintenance of health, avoidance of alcohol and flying particles, and treatment of conjunctivitis and lacrimal obstruction are important, S. H. Bowman says that practically all the pathogenic organisms found in the conjunctival sac have been known to cause hypopyon ulcer; although his examination of the hypopyon itself up to the time of perforation has always shown the pus to be sterile. The hypopyon shows the response of the body to infection. Of seventeen surgeons asked if they thought it of serious prognostic significance, eleven thought it was, four said it did not matter, and two were doubtful. The organism most frequently present is the pneumococcus. After this in frequency are the diplobacillus of Morax-Axenfeld, gonococcus, bacillus pyocyaneus, streptococci and staphylococci.

In treatment W. H. McMullen employs in all cases the galvanocautery, heated to dull red, to thoroughly cauterize the infiltrated advancing edge. For lotions and drops he uses one-half saturated solution of magnesium sulphate, as an eye bath for five minutes every two or three hours, and prefers not to bandage the eyes. F. Fergus absolutely prohibits the use of ointments or bandages. The douche is used freely, and a solution of pilocarpin is instilled; one grain of pilocarpin nitrate in three drams of distilled water. A. C. Hudson has regarded increase of intraocular pressure as an urgent indication for operation; the so-called Saemisch incision being more efficient than peripheral paracentesis. Among principles of treatment, A. F. MacCallan urges not to close the eyelids by applying fomentations or dressings. If atropin is used it should be for the relief of pain. The advantage of eserin is first the freeing of the angle of the anterior chamber, enabling natural drainage to be carried on, and second to keep the iris near the base of the ulcer, to block the gap if it per-

forates and vascularize the edges and favor repair. The extreme value of sunlight applied to the body generally is undoubted. M. L. Hepburn is in favor of the actual cautery, to burn deeply the corneal tissue at the site of ulceration. He would "always have the eye uncovered and irrigate it as frequently as possible."

H. Herbert makes a T-shaped incision in the cornea with a Graefe knife held with its back toward the crystalline lens. "It gave the advantages of the Saemisch incision without its drawbacks." A. C. Reid makes the T-shaped incision by pushing a wedge-shaped Ushers' spatula into the first incision and cutting against that with a knife like a gum lancet. R. E. Wright found that in India alcohol played no part, but deficiency and lowered vitality were factors. In bad serpent ulcer in adults no treatment availed unless tension was controlled. The use of miotics was very important. A. L. Whitehead found the proportion in male to female sufferers five to one, and most cases were traumatic. Arnold Lawson put in a plea for peroxid of hydrogen, one volume to four of water. A. H. H. Sinclair found the Shahan thermophore the best treatment, and said that the Saemisch section could be made painless by novocain injected near the ciliary ganglion. *E. J.*

### 7. UVEAL TRACT, SYMPATHETIC DISEASE, AND AQUEOUS HUMOR

Grosz, E. **Sympathetic Ophthalmia.** Arch. f. Augenh., 1927, v. 98, Sept., p. 322.

Grosz reviews the research done and the various theories as to sympathetic ophthalmia. Among other things, he states that if the sympathetic ophthalmia is manifest in a blind primary eye, the latter should be enucleated. However, if the offending eye still has vision it should not be removed, as it occasionally happens that the secondary eye becomes blind, while the offending eye retains some sight. This occurred five times in his series of 156 cases. He feels the use of mercury as recommended by Mackenzie is still the most reliable method of treatment. He also emphasizes that these eyes do not tolerate secondary operations.

*F. C. Cordes.*

Hofe, K., and Perwitzschky, R. **The pupil and middle ear disease.** Arch. f. Augenh., 1927, v. 98, May, p. 181.

Examining one hundred cases of middle ear disease, Hofe and Perwitzschky found that anisocoria was not present more frequently than among normal patients. From this they conclude that anisocoria cannot be classed among the symptoms of middle ear disease. *F. C. Cordes.*

Meesmann, A., and Volmer W. **Inquiry as to the cause of sympathetic ophthalmia.** Arch. f. Augenh., 1927, v. 98, Sept., p. 271.

Meesmann and Volmer doubt Guillery's theory that sympathetic ophthalmia is due to tuberculosis. From their experimental work on rabbits and their clinical experience, they conclude that there is no direct invasion by tubercle bacilli. Whether or not toxic or autotoxic products play an important rôle is a question they cannot answer.

*F. C. Cordes.*

Meller, J. **The significance of the ciliary epithelium in absorption of vitreous hemorrhage.** Arch. of Ophth. 1928, v. 17, March, p. 134.

In this excellent paper the author reviews the theories propounded to account for vitreous hemorrhage, and agrees with them in the main, that is, in the first place that hemolysis of the contents of the erythrocytes takes place, causing them to extravasate and in a dissolved form pass through the vitreous to flow out through the excretory ducts with the lymph, or after extravasation to become precipitated as granules later to be dissolved and carried off by the ocular fluid.

In addition to this, however, he shows that the nonpigmented cells of the epithelium, especially of the flat part of the ciliary body, are able to absorb, to digest, and to carry away decomposed masses of blood, and that

under certain conditions a broad area can absorb blood from the vitreous and may occasionally dispose even of large amounts in a surprisingly short period of time. A beautiful colored photomicrograph shows changes in the protoplasm of the epithelial cells in the inner unpigmented body of the pars plana of the ciliary body. The section was taken from a patient whose eye had been injured seventeen days before removal. At examination, the vitreous chamber of this eye was found to be almost entirely filled with a mass of blood clots. The blood corpuscles were transformed into a detritus of tiny granules imbedded in a reddish, possibly previously liquid stroma. The anterior sections, however, were free of these granules. The pigmented contents filled all the cells in the non-pigmented layer up to the pigment layer. The nuclei of the cells were normal.

The author argues that these cells exhibit an absorptive activity, that they absorb fluid and substance contained in it from the vitreous and pass them on. He goes on to speculate as to the probable absorptive activity of these cells of the ciliary body as part of their regular function, and intimates that interference with this function may readily be one of the causative factors in production of a glaucoma.

*M. H. Post.*

## 8. GLAUCOMA

D'Autrevaux, Y. **Some remarks on the use of the Bailliart tonometer.** Ann. d'Ocul., 1928, v. 165, Jan., pp. 46-52.

The author describes the Bailliart tonometer in detail and points out some of its advantages. He emphasizes (1) the scleral contact surface, which permits the use of the instrument without anesthesia when necessary; (2) the simplicity of the application, which can be made with the patient in any position; (3) the absence of weights which require changing; and (4) the elimination of an indicator which easily becomes bent.

*L. T. P.*

Fuchs, Adalbert. **Communications on pseudoglaucoma.** Brit. Jour. of Ophth., 1928, v. 12, Feb., p. 65. (See Section 11, Optic Nerve and Toxic Amblyopia.)

Gifford, H. **The cause of the glaucoma of hypermature cataract.** Arch. of Ophth., 1927, v. 56, p. 457. (See Section 9, Crystalline Lens.)

Henderson, E. E., and James, R.R. **A peculiar case of glaucoma.** Brit. Jour. of Ophth., 1928, v. 12, Feb., p. 74.

This is the record of a case of chronic glaucoma with markedly dilated episcleral veins. When first observed, in 1910, at the age of 48 years, aside from the enlarged veins the eyes appeared normal; physiological cups were present. The man was kept under observation. In 1923 it was noted that the left cup was larger. Two years later the patient noted that his right eye did most of the work. The left was congested, but had no pain or halos. The cup had become pathological, tension full. Enlarged blind spot, pain, central scotoma, and contracted field. Subjective symptoms were quite absent. The eye was trephined, and this was followed by the use of eserine. With correction vision was 6/5. The contracted field persisted, vision continued at 6/60. The right eye showed no evidence of glaucoma when last examined in August, 1927. (Two illustrations, five field charts.)

*D. F. Harbridge.*

R. B. Hird. **Glaucoma in a girl of ten.** Trans. Ophth. Soc. United Kingdom, 1927, v. 47, p. 382.

A girl of ten years who had always been myopic was found to have a deep glaucoma cup in the right eye and a shallow one in the left. Vision = R. 6/12; L. 6/9. Eserin kept the tension down only when daily drinking of salt solution was added. Iridectomy of the right eye and trephining of the left kept tension down to R. 19, L. 22 mm. This continued after four months.

*E. J.*

Hofe, R. **Clinical and experimental results in the mechanics of glaucoma therapy.** Arch. f. Augenh., 1927, v. 98, Sept., p. 201.

From his experience with various drugs in glaucoma therapy, Von Hofe concludes that the effect is only in part dependent upon the contraction or dilatation of the blood vessels. In addition, the direct effect of the applied drug upon the blood vessel wall cells of the sympathetic nervous system must be considered. This agrees with the newer theories of the physiology and pharmacology of the vegetative nervous system. *F. C. Cordes.*

Lloyd, Ralph I. **X-ray therapy in certain types of glaucoma.** Arch. of Ophth., 1927, v. 16, Sept., p. 445.

The author suggests the use of x-ray treatment for relief of pain in cases of glaucoma where all vision is lost. He cites three cases where it was eminently successful, giving relief in a few hours. The method was suggested by the work of Hessberg, published in Klinische Monatsblätter für Augenheilkunde, v. 64, p. 607, entitled "Die Behandlung des Glaucoma hæmorrhagicum mit Roentgenstrahlen."

Hessberg recommended six radiations, nine to twenty minutes of skin exposure, two to four mm. of aluminum filters. He believed that the results were due to obliteration of the capillaries, stopping the blood flow, resulting in the relief of tension and pain. Separation of fibers, degeneration of the intima, and vascularity and disappearance of the muscularis took place. He also suggested that there might be an inhibitory influence upon the secreting function of the ciliary body.

Lloyd recommends this treatment especially for those cases showing deposits on the posterior surface of the cornea, which justify the diagnosis of secretion hypertony. Should such cases be relieved, the result would corroborate the idea that secretion in the ciliary body can be inhibited in the same manner as in the choroid plexuses of the brain. *M. H. Post.*

Marlow, Searle B. **The non-operative treatment of chronic glaucoma.** Arch. of Ophth., 1928, v. 17, March, p. 165.

In this paper the author reports the results of myotic treatment in thirty-five cases of chronic glaucoma. He uses eserin sulphate, 0.02; pilocarpin hydrochloride, 0.40; cocaine hydrochloride, 0.20; aqua destillata, 20.00. Data gathered from these cases indicated that, no matter what the type of disease, the younger the patient the more serious the prognosis. Advanced cases of chronic inflammatory glaucoma progressed under any treatment or operation. In the cases of simple glaucoma, myotics apparently checked the progress of the disease. Myotic treatment carried on for a long period of time does not appear to interfere with the results eventually obtained from operation. *M. H. Post.*

**Salvati. Influence of fats and cholesterin on ocular tonus.** Ann. d'Ocul., 1928, v. 165, Jan., pp. 52-55.

The author tested the cholesterin content in one hundred patients with glaucoma, and found the fat content of blood to be greatly increased. This was especially true in hemorrhagic glaucoma. He gave thirty cg. of cholesterin to each of five dogs. Examination from three to four months later showed a hypertension in all the eyes together with shallow anterior chamber, hemorrhages of the retina, and sclerosis of the vessels. Microscopic examination showed the filtration angle to be somewhat obstructed, with marked infiltration at the base of the iris, composed of leucocytes and large pigmented cells. There was marked sclerosis of the vessels of the iris, also of the retina, with formation of fibrous tissue. Many retinal hemorrhages were present. The central vessels of the optic nerve showed sclerosis.

In conclusion, the author thinks that hypercholesterinemia is capable of causing increased intraocular tension in man, whether by an alteration of the filtration walls or by lesions of

the centers which govern intraocular equilibrium. *L. T. P.*

Thomasson, A. H. **The value of scotometry in the diagnosis and treatment of glaucoma.** Arch. of Ophth., 1928, v. 17, March, p. 160.

In this paper the author makes a plea for the frequent mapping of the blind spot for Bjerrum's scotoma. This can only be detected by Bjerrum's original method, that is by means of a tangent screen, or some substitute, at a distance of one meter or more, using test objects 1/16 to 1/8 degree, that is a one or two mm. object. He finds the observation of this scotoma far more accurate than any other method for estimating the presence and progress of glaucoma. *M. H. Post.*

Vannas, Mauno. **Clinical investigation of the action of adrenalin in glaucoma.** Acta Ophth., 1927, v. 4. no. 4, p. 339.

Vannas has studied most painstakingly the action of adrenalin in glaucoma, and gives us a comprehensive survey of the subject. Sixty-one glaucomatous eyes in fifty-one individuals were studied, following injection of 0.2-0.5 c.cm. adrenalin subconjunctivally and readings made with the Schiötz tonometer. Thirty-six eyes reacted with a fall of pressure, averaging 18 mm., 11 showed an average increase of pressure of 11 mm., while in 14 no change occurred. In 25 eyes with tension 28 to 60 mm. the pressure was normalized. With pressure not higher than 40 mm., 21 of 31 eyes were reduced to normal tension, but pressure above 40 mm. was rarely brought down to normal. Pressure began to fall in most cases within one hour, but occasionally not until the second day, and the fall was gradual, reaching the minimum usually during the first day. In ten eyes a slight increase (3-10 mm.) was noted before the decrease occurred. The lower tension continued an average of one to four days, in one case twelve days. When increased tension occurred it was within the first three hours.

The second and constant action of adrenalin was dilatation of the pupil, occurring within three to six minutes, and lasting six to twelve hours. The fall in pressure usually occurred after the dilatation of the pupil began to subside.

The best results occurred in glaucoma simplex, 26 to 34 eyes, while the poorest results were noted in inflammatory glaucoma. The results in secondary glaucoma varied greatly. The comparison of adrenalin and the miotics showed that the fall in pressure occurred in just the same cases and adrenalin therapy afforded no definite improvements over miotics. In other than glaucomatous eyes only a slight transitory fall in pressure occurred. The mechanism of the action of adrenalin is probably the direct or indirect effect of pupillary dilatation. The fall of pressure occurs through the effect upon the uveal vessels.

In many cases the blood pressure was increased following the subconjunctival injection but the writer questions if this is not due as much to pain, psychic influence, etc., as to the adrenalin.

*E. M. Blake.*

Yoshida, Y. **Pigmentation of the ligamentum pectinatum in the Japanese.** Graefe's Arch., 1927, v. 118, p. 796.

Because Levinsohn and Köppe thought that the pigment findings in the pectinate ligament were of great importance in the pathogenesis of glaucoma, the author undertook observations among the Japanese to determine the relative amounts of pigment in this locality according to age. Clinical observations directly on the ligament were made by means of an angloscope with corneal contact glass and ordinary microscope tube giving a magnification of 41 times. There were examined 48 eyes in individuals varying in age between 15 and 59 years. In addition the microscopic findings in 47 enucleated eyes from persons varying in age between 21 days and 78 years were included.

It was found that pigment deposits in the pectinate ligament of the Japan-

ese occurred earlier and were perhaps more pronounced than among the Europeans. The deposits could be found in eyes of Japanese as young as ten years old. On the other hand, careful comparison of the number of glaucoma cases in the European and Japanese clinics showed a slightly smaller amount of glaucoma among the Japanese. *H. D. Lamb.*

## 9. CRYSTALLINE LENS

Bailey, F. W. **Cataract operations performed upon patients in their own beds.** Jour. Iowa State Med. Soc., 1928, v. 18, Jan., p. 8.

Twenty-six senile cataract operations performed in the patients' own beds are reported. The pre- and post-operative care are discussed, as well as the writer's reasons for adopting this procedure. *D. H. O'Rourke.*

Davenport, R. C. **The after results of cataract extraction.** Brit. Jour. of Ophth., 1928, v. 12, Feb., p. 85.

This is a comparative analysis of the results of operations at Moorfields from 1919-1925 inclusive with those reported by Marshall 1889-1893 inclusive. At Moorfields there were 2,368 exclusive of traumatic cataract and those performed or attempted by Barraquer's method. Twenty-five per cent were simple extractions, much higher than Marshall's. Peripheral iridectomy shows an increasing usage greater than any other method. Vision of 6/12 or better was had by 68.71 per cent, while Marshall's showed 75 per cent with 6/18 or better. The vitreous loss in 4.2 per cent is strikingly similar. Four cases of sympathetic ophthalmitis are recorded. The series includes 1,479 needling operations, a percentage of 62.4. This is much higher than in Marshall's report and is accounted for by greater safety in performance and the fact that cataract extraction is now undertaken much earlier. *D. F. Harbridge.*

Ellis, Z. H. **Nonoperative treatment of cataract with report on lens antigen treatment.** New York State Jour. Med., 1927, v. 27, Dec. 1, p. 1296.

The author treated twenty-seven cases of all types of cataract to determine the efficacy of lens antigen in the treatment of cataract. He presented fourteen control cases, all of which showed in one or both eyes lens opacities which were stationary under observation for several years. The technique of administration, dosage, etc., was exactly the same as that used by A. Edward Davis. The type of cataract treated were: traumatic, two; cortical, fifteen; sclerosed nucleus, five; diabetic, four; complicating glaucoma, one. Of these, fourteen showed progression of the cataract, thirteen showed no change in the progress of the cataract, and no case showed absorption of the cataract as judged by slit lamp examination or improvement in vision. *D. H. O'Rourke.*

Elschnig, A. **Aids in the extraction of senile cataract.** Arch. f. Augenh., 1927, v. 98, Sept., p. 306.

Elschnig feels that the newer aids to cataract extraction such as akinesis, canthotomy, fixation of the superior rectus by suture, and conjunctival flap suture are not as widely used as they deserve. In addition, he has found three procedures very valuable: (1) retrobulbar anesthesia, which is useful not only for anesthesia but also in producing a slight exophthalmos in deep set eyes; (2) the use of iodin along the conjunctival wound; (3) the instillation of sterile air in collapse of the cornea. After completion of the operation, the platinum tip of a sterile syringe is heated to the glowing point. The air is slowly drawn in, and after being allowed to cool is injected into the anterior chamber. *F. C. Cordes.*

Elschnig, H. **Extraction of the normal lens in high myopia.** Arch. f. Augenh., 1917, v. 98, Sept., p. 312.

Following Bohm's work, Elschnig extracted the lens in twenty-nine patients with high myopia. Of these, twelve had both eyes operated upon, making a total of forty-one eyes.

The age varied from eleven to forty years; the myopia from fourteen to

forty-four diopters. The results were gratifying. The cases in which poor vision was obtained showed preexisting fundus changes. The operations were all done without iridectomy, and in only two cases was the pupil drawn up. Secondary discissions were necessary in seventeen cases, and resulted in good vision. The advisability of operating upon both eyes must be decided in each individual case.

*F. C. Cordes.*

Elschnig, H. **Additional report on lens extraction in high myopia.** Arch. f. Augenh., 1927, v. 98, Sept., p. 320.

In an additional communication, Elschnig reports a case of twenty-eight diopters of myopia in which he did an intracapsular operation rather than the usual discission and extraction method. After akinesis, retrobulbar anesthesia, superior rectus fixation, and conjunctival flap suture, he was able to extract the lens without mishap. The resulting vision with correction was 0.8. *F. C. Cordes.*

Giannantoni, C. **Chemical composition of the blood of cataract patients.** Ann. di Ottal., 1927, v. 55. May-June, pp. 375-382.

This is a sequel to a previous study of the author's on the biochemical processes of the cataractous patient. His studies lead him to the conclusion that the cataractous patient shows a definitely decreased renal permeability. The urine, while not lowered in specific gravity, is lessened in amount, and contains a smaller amount of solids, especially urea, as compared with that of noncataractous persons of the same age. The same conclusion is borne out by the functional kidney tests. In the present study, the total nitrogen of the blood was estimated, and it was found to be 0.27 to 0.36 gm. per liter, or 0.32 gm. on an average, as compared with 0.24 to 0.32 gm. in normal persons above fifty years of age. Considered with the urinary findings, this indicates an incomplete excretion of nitrogen by the kidneys rather than an increased production. While others have claimed that the presence in the blood of some toxic substance causes cataract, it seems to the author more probable that the increased blood-nitrogen and the cataract may both be results of decreased kidney permeability. This decreased permeability may cause an increase in acid radicals in the blood, which would lend some support to the theory of cataract formation as a result of acidosis. *S. R. Gifford.*

Gifford, H. **The cause of the glaucoma of hypermature cataract.** Arch. of Ophth., 1927, v. 56, Sept., p. 457.

In this short paper the author states his belief that the glaucoma of morgagnian cataract is the result of the products of lens hypermaturity. The supposition that the increased mobility of the nucleus of such a lens causes hypertension by mechanical action is without proof or probability. The author supports this by illustrations from several cases. *M. H. Post.*

Jacques, L. **Cataract with postoperative tetany.** Amer. Jour. Med. Science, 1928, v. 175, Feb., p. 185.

In two cases here reported thyroidectomy was followed by symptoms of tetany and partial cataract. In a woman of 23 years spasms of tetany appeared in about three months, and blurring of vision was noticed after eight months. At the end of fifteen months from the operation vision was reduced to 0.6 in one eye and light perception in the other. A woman of 27 years had subtotal thyroidectomy and two years later a removal of remaining thyroid tissue. Soon after this there were carpopedal spasms, and after about a year progressive blurring of vision, with perinuclear opacities of the lens. Under treatment some of the symptoms of parathyroid deficiency diminished, but vision did not improve. Thirty-four cases of cataract developing after thyroidectomy were found recorded in the literature. The ages of these patients varied from 23 to 50 years, and thirty of them were women.

The lens opacities were observed at from two months to thirteen years after the thyroidectomy.

Experimental studies of the effects of removal of the parathyroids in animals have shown the production of lens opacities in a large proportion. The influence of parathyroids on calcium nutrition and the large proportion of calcium salts in the lens in cases of senile cataract are cited, but the pathogenesis of tetany cataracts and the theories regarding their production are still unsettled. In one of the reported cases the administration of parathormone failed to arrest the progress of the cataracts.

*E. J.*

Kirby, Daniel B. **The Cultivation of lens epithelium "in vitro."** Arch. of Ophth., 1927, v. 56, Sept., p. 450.

Published in full in the transactions of the American Academy of Ophthalmology and Otolaryngology, 1926, pp. 137-153.

This paper is the result of an investigation conducted by the author as Research Fellow for the American Academy of Ophthalmology and Otolaryngology, by virtue of a grant secured from an anonymous donor by Dr. John M. Wheeler.

Cataract may be a deficiency disease and the problem is to discover, if possible, the nature of the deficiency. It was, therefore, attempted to study the developing lens in the living embryo, and the living cells of the lens. An attempt was made to cultivate the cells of the lens outside the body, and this paper constitutes the report of that investigation.

First, in describing the cultivation of the lens epithelium outside the body, it is necessary to prove the identity of the tissue explanted. That this procedure could be carried out successfully was proven by a series of experiments. In the first place it was shown that extraneous tissue explanted with the lens will grow, and if both grew one would contaminate the other; secondly, that with proper technique microscopic dissection would free the embryo lens from all extraneous tissue; thirdly, that the epithelium of the lens so freed and properly cultivated would migrate and proliferate; and, fourth, that secondary and tertiary cultures from these cells could be grown so that a pure lens epithelium might be cultivated.

The first step in this study has been completed. The question now arises: Is there a substance constantly present in the living body to act in a growth-producing or a growth-inhibiting manner upon the cells of the lens? Is it an intraocular or extraocular product? Certain physicochemical combinations of protoplasm that change the index of refraction of the cells must be present to produce the transparency of the lens. This secret is contained within the living transparent cells of the lens, waiting to be discovered. Are the changes in this transparency changes in the protein of the lens affecting its water-binding power?

*M. H. Post.*

Meyer, S. J. **Detachment of the zonula lamella.** Arch. of Ophth., 1928, v. 17, March, p. 121.

The zonular lamella was so named by Berger. He found that on unraveling the macerated lens capsule with potassium permanganate the outer layer revealed a physical property different from the deeper or inner layer, in that in contrast to the more irregular zigzag marginal rents it possessed straight torn margins.

Busacca, by a silver impregnation method, was able to establish the existence of zonular fiber bundles, which penetrated into the lens capsule through its outer two thirds. He further demonstrated in the equatorial and periequatorial region a thin layer which extends around the entire lens capsule. The zonular fibers lie on it and extend through it. The author regarded this layer as the zonular lamella. Most investigators consider it to be an ectodermal structure, a differentiation product of the anterior capsule of the membrana vasculosa. In 1922 Elschnig published findings

in three eyes from two glass blowers, in which with the slit-lamp he observed detachment of the zonular lamella throughout the entire anterior capsule. In 1926 he reported upon a blacksmith with a similar condition. This was the first case reported where the accident had not occurred in a glass blower. He concluded from these cases that rupture and detachment of the zonular lamella was produced by radiation of the heat causing first, a change of elasticity, then rupture, and finally detachment of the zonular lamella. Numerous other authors have reported similar findings.

The author reports two cases, in the second of which the lamella was present after an intracapsular cataract extraction according to the method of Stanculeanu-Török. The paper is accompanied by two beautiful illustrations. *M. H. Post.*

Nordmann, Jean. **Cataracts of endocrine origin.** Ann. d'Ocul., 1928, v. 165, Jan., pp. 29-45.

The author is impressed with the frequency of cataracts due to disturbance of the endocrine system. These are very variable in form, but usually the greater part of the trouble is at the surface of the lens and the cataracts are habitually bilateral. He describes in detail a number of cases. He believes that any bilateral cataracts in young people in whom no obvious cause for the trouble exists should be studied from the point of view of imperfect function of the endocrine organs. *L. T. P.*

Schnyder, Walter F. **A hitherto unknown type of familial presenile subcapsular shell cataract with simultaneous familial changes in the vitreous.** Klin. M. f. Augenh., 1927, v. 79, Nov., p. 585. (6 ill.)

Five cases, occurring in brothers and sisters of the same family, are described in detail. Two had a type of cataract deviating from the known types, and all had changes of the vitreous which developed in the fourth decade of life. The latter consisted in filiform disintegration with fine whitish dots, without other eye affections, that led to infiltrations of the vitreous, which the author attributes to familial, probably hereditary, basis.

*C. Zimmermann.*

Tennent, S. N. **Cataract extraction with peripheral iridectomy.** Lancet, 1927, v. 2, p. 1174.

The author considers prolapse of the iris and operative modifications to avoid prolapse; and gives a historical survey of the peripheral iridectomy. Apart from exceptional cases he believes that cataract extraction with peripheral iridectomy will largely replace both simple extraction and the usual combined extraction, since it combines the advantages of both.

*D. H. O'Rourke.*

Tyson, Henry H. **Lenticonus posterior.** Bull. New York Academy of Med., second series, 1927, v. 3, Dec., p. 735.

Tyson reports a case of lenticonus posterior. With the ophthalmoscope the characteristic picture was seen. With the slit lamp, the picture varied constantly, depending upon the angle and depth of focus used. A concise description as seen with the slit lamp is given.

*D. H. O'Rourke.*

Van der Hoeve, J. **The antagonism between senile cataract and senile degeneration of the macula, and the frequence of senile degeneration of the macula immediately after cataract operation.** Zeit. f. Augenh., 1927, v. 63, Oct., p. 127.

An antagonism between two diseases can be relative or absolute. It is absolute where they never occur together, and relative when the combination occurs more rarely than is expected from the frequency of the two individual diseases. The author analyses his own statistics and some that have been published by others to show that a relative antagonism exists between senile cataract and senile macular degeneration. The conclu-

sions drawn from his statistics are in accord with his view though he does not feel that both diseases are the result of the action of ultraviolet rays on tissues which are congenitally less resistant. *F. H. Haessler.*

Wessely, K. **Technique of operation for secondary cataract.** Arch. f. Augenh, 1927, v. 98, May, p. 166.

Wessely uses a specially designed narrow keratome rather than a discission needle. He feels a larger opening can be made in this manner. It also has the advantage that a small de Wecker scissors can be introduced and used should difficulty be encountered. *F. C. Cordes.*

## 10. RETINA AND VITREOUS

Gescher, J. **The physiological-optical significance of intraocular visibility of the motility of the blood.** Arch. f. Augenh., 1927, v. 98, Sept., p. 375.

Gescher shows that the intraocular visibility of the blood cells is due to the chromatic aberration of the eye. In the red-free light of Vogt, it is barely visible, while the blue rays with their greater wave length increase this visibility. *F. C. Cordes.*

Heesch, K. **Research relative to the ultramicroscopic and microscopic fibrous structure of the vitreous.** Arch. f. Augenh., 1927, v. 98, May, p. 129.

Heesch describes his method of staining the microscopic vitreous fibers. He did not succeed in staining the ultramicroscopic ones.

*F. C. Cordes.*

Heesch, K. **The structure of the vitreous as seen by the slitlamp.** Arch. f. Augenh., 1927, v. 98, May, p. 121.

Heesch describes his findings in examination of the vitreous with the slitlamp, and compares them with the ultramicroscopic findings.

*F. C. Cordes.*

Heine, L. **Congenital defects of the visual fields.** Arch. f. Augenh., 1927, v. 98, May, p. 108.

Heine reports twelve cases of congenital field defects that simulated beginning detachment of the retina, embolus or glaucoma. Among these were cases of congenital colobomata of the optic nerve, circumpapillary coloboma of the choroid, macular cyst, aplasia of the superior temporal artery with optic nerve coloboma, and one of medullated nerve fibers rather far removed from the disc. Most of these had been treated previously as active processes. *F. C. Cordes.*

Koch, C. **Scleral excision in detachment of the retina.** Arch. f. Augenh., 1927, v. 98, May, p. 156.

In addition to those reported in 1914, Koch presents eighteen cases of scleral resection done in Elschnig's clinic for detachment of the retina. At the time of operation, three had a definite vitreous loss and one a rupture of the choroid. Postoperatively six had vitreous hemorrhage, two had hemorrhage into the anterior chamber, and six tear of the retina at the site of operation. Seven cases showed definite improvement, six showed no improvement, and five were made worse by the operation. The greatest improvement was noted in the recent cases, and among these only once was complete and permanent restoration of vision obtained. Aside from twenty-six very recent cases, there seemed to be no relation between the result and the duration of the detachment. *F. C. Cordes.*

Lida, E. and Adrogue, E. **The blood pressure in the central artery of the retina.** Archivos de Oftalmologia de Buenos Aires, 1927, no. 6, p. 393.

The authors used Baillart's procedure for measuring the blood pressure in the central artery of the retina in fifty apparently healthy subjects. They found it to be 80 to 100 mm. Hg systolic and 40 to 50 mm. Hg diastolic, increasing with the age of the patient.

*M. Beigelman.*

Montalti, M. **Commotio retinæ.** Ann. di Ottal., 1927, v. 55, May-June, pp. 382-404.

The literature on this condition is reviewed, and the histories of two cases, in which the course was checked by exact records of the resulting scotoma, are given. One was a typical case, following blunt injury with a toy pistol, in which the fundus showed edema of the central region, with vision reduced to 1/10. The absolute scotoma cleared up with the fundus picture, with return to normal function in three days. In the second case a small retinal hemorrhage was seen, surrounded by edema. After six days vision had returned to only 5/60, and a scotoma was left corresponding to the hemorrhage, but eight months later central vision was normal and there was no scotoma. Since no cases of the condition have ever come to section, attempts were made to produce the same condition by causing similar traumatism to the eyes of apes and rabbits. While in rabbits the lesions produced consisted in hemorrhages in the outer coats, the retina remaining intact, in monkeys the retina showed an intense edema without hemorrhages or signs of inflammation. The origin of this transudate into the retina must be sought in a disturbance to the retinal circulation, and this is probably due to a paralysis of the sympathetic nerve supply, which would also explain the miosis and the constriction of the retinal arterioles which are seen clinically. (Bibliography, 7 illustrations.)

*S. R. Gifford.*

Redslob, E. **Structure of vitreous.** Ann. d'Ocul., 1927, v. 164, Feb., p. 107.

The vitreous has been treated with pyridine and by this new method the author found that the vitreous was encapsulated by a membrane studded with dots over most of its surface. These points were the insertions of fibers which extended from the retina. When this membrane was peeled off in part, homogeneous material protruded. The author found the retrocrystalline space to be an actual cavity traversed by fine fibers. The usual slit-lamp picture of vitreous lines he attributes to folds in the capsule of the vitreous. The retrocrystalline space he thinks due to the movement between the vitreous body in its capsule and the lens.

The canal of Cloquet could readily be injected from the retrolenticular space, and on tipping the globe the coloring matter flowed backward from this space to a trumpet-like end at the disc. The canal was composed of two sets of fibers, longitudinal and spiral. The latter formed constrictions in places, giving the injected canal a caterpillar-like appearance.

*L. T. P.*

Stübel, A. **Congenital inflammation of the eyes.** Arch. f. Augenh., 1927, v. 98, May, p. 184.

Stübel reports a congenital tubular formation in the vitreous of a fourteen year old girl. In the second patient, a fourteen day old infant, there was evidence of bilateral nonspecific iridocyclitis. The posterior segment of each eye was normal. *F. C. Cordes.*

Van der Hoeve, J. **The antagonism between senile cataract and senile degeneration of the macula, and the frequence of senile degeneration of the macula immediately after cataract operation.** Zeit. f. Augenh., 1927, v. 63, Oct., p. 127. (See Section 9, Crystalline Lens.)

Zur Nedden. **The curative value of aspiration of the vitreous.** Arch. of Ophth., 1928, v. 17, March, p. 109.

The present report contains the conclusions from 300 cases aspirated during the past year. The author, who has written numerous essays on this subject, states that loss of vitreous is quickly and spontaneously replaced, almost as quickly as aqueous. It is easily aspirated in the conditions in which this procedure is indicated, due to the fact that it is usually liquefied. He does not approve of the substitution of saline solution for the vitreous removed, as he believes that one of the principal benefits derived from aspiration is due to the bactericidal and reabsorbent qualities of the newly

formed vitreous which takes its place. In addition, the substituted solution may produce irritation and infection. He uses a lancet-shaped cannula with an ordinary record syringe. The lumen of the cannula should vary from 0.3 to 0.8 mm. It is sterilized by cleansing with mercury oxycyanide, after which it is immersed in boiling water.

After disinfecting the lids and the conjunctival sac, the puncture is made either from below or above, five to six mm. from the limbus. The needle is advanced into the globe about 1.5 cm. and from 0.2 to 0.6 c. c. may be withdrawn, according to the nature of the case. A split spatula is pressed gently against the sclera as the needle is withdrawn. At first, the tension is greatly lessened, the bulbar conjunctiva becomes inflamed, and the anterior chamber slightly flattened. After a few hours a deepening of the anterior chamber takes place, and this remains for two or three days. For every 0.1 c. c. of removed vitreous a hypermetropia of 1.6 D. supervenes, but the original refraction returns in twenty-four hours. In an aphakic eye, the needle may be inserted at the limbus, passing through the anterior chamber into the vitreous.

Best results are seen in cases of subacute inflammation from progressive infection. Here twice daily 0.5 c. c. is removed. A similar procedure is followed in cases of ectogenic infections of the anterior eyeball, threatening to develop into panophthalmitis. Foreign protein therapy may be advantageously used at the same time. In cases of traumatic vitreous hemorrhage good results have been obtained, though it is best to wait for eight or ten days, not longer, because greater delay may result in organization. In these cases the first aspiration is 0.2 c. c., then after two or three weeks 0.5 c. c. In spontaneous cases greater care is necessary, as there may be recurrence of the bleeding.

Aspiration may also prove valuable in iridocyclitis resulting from vitreous hemorrhage. The eye must be absolutely free from irritation and the vision impaired by vitreous opacities. The vitreous in these cases is fluid. Here 0.2 c. c. only should be removed, and this should not be repeated until after three weeks or more. This procedure may also be followed in cases of diffuse choroiditis, even when no opacity is present; in embolism of the central artery of the retina; and in traumatic glaucoma with subluxation of the lens. The author is convinced that in these cases the central portion of the vitreous is fluid, while the peripheral portions are inspissated, the latter condition being the cause of the elevation of tension. In some cases of hemorrhagic glaucoma the treatment is valuable, and again in cases where the anterior chamber is quite flat. It is contraindicated by high myopia, where detachment of the retina is liable to follow. In other conditions, however, this complication is very infrequent.

The author believes that this is a very valuable method of treatment for some otherwise most intractable cases.

*M. H. Post.*

## 11. OPTIC NERVE AND TOXIC AMBLYOPIAS

Ascher, Marie F. **The treatment of lues and tabetic optic atrophy.** Med. Klin., 1926, v. 52, Dec., p. 1967.

The cases have been gathered together and studied as to the development of optic nerve atrophy according to the time and amount of treatment they had received for the luetic infection. The atrophy appeared twenty-five to thirty years after infection in a few cases, but in the large majority in eight to twelve years after infection. As brought out by Elschnig in 1911, the only apparent prevention is in those who have had early and prolonged treatment. After development of the optic nerve atrophy, no favorable results could be uniformly had with any line of treatment.

*Beulah Cushman.*

Fuchs, Adalbert. **Communications on pseudoglaucoma.** Brit. Jour. of Ophth., 1928, v. 12, Feb., p. 65.

This contributor refers to a previous contribution on anomalies of the optic disc which might be mistaken for glaucomatous excavation. As a very rare occurrence a congenital pit in the optic disc may coexist with a glaucomatous excavation such as was present in the case reported by the author. A woman aged 64 years discovered ten years previously poor vision of her right eye. Glaucoma had been diagnosed. The general appearance of the eye and fundus was normal except for the presence of a complete excavation. In the nasal half of the floor of the cup was a sharp pit containing a short length of vessel. Tension 22 mm. Hg (Schiötz). The presence of the vessel favors the theory that the pit was congenital.

The author's two following cases had colobomatous excavations simulating glaucoma. In the first, a woman aged 43 years presented in her right eye lowered vision and deeply excavated optic nerve which was surrounded by a narrow white halo. Tension twenty mm. The field showed a much enlarged horizontal elliptical blind spot. The second patient was a child aged twelve years. There was a deep cup. Surrounding the disc was a depressed halo about one third of the diameter of the disc. Tension normal. Both discs were the same size, which was in variance with the preceding case.

The above cases simulated glaucoma simplex, while the following case of angiectasia resembled inflammatory glaucoma. A boy aged fourteen years had had injected eyes for five years. A diagnosis of glaucoma had been made by another oculist. The case presented a marked ectasia and tortuosity of the anterior ciliary and conjunctival vessels similar to that observed in an eye which had had an attack of acute glaucoma, with the difference that other symptoms were absent. The case was one of vascular change in contradistinction to glaucoma. Reference is made to a parallel case reported by the elder Fuchs and two by Leber. The condition seems to be stationary. While such cases are very rare they are important to recognize, owing to their resemblance to inflammatory glaucoma.

*D. F. Harbridge.*

Guillery, H. **Toxic changes in the optic nerve.** Arch. f. Augenh., 1927, v. 98, May, p. 1.

A. Fuchs, after a review of the optic nerve preparations in sympathetic ophthalmia, concluded that the group of lymphocytes found in the nerve and along the pial sheaths were specific for sympathetic ophthalmia. Guillery does not agree with this, as he finds that the changes described by Fuchs are also present in cases of toxic uveitis and therefore are not specific for sympathetic ophthalmia.

*F. C. Cordes.*

Koyanagi, Y. **Anomalous development of the optic nerve, with rare anatomical findings.** Klin. M. f. Augenh., 1927, Nov., p. 591. (6 ill.)

A boy aged nineteen years, who had poor vision from infancy, became blind about five years ago in his left eye, which presented the aspect of coloboma of the optic nerve. The irregular, not round, disc was twice as large as normal, well defined, greyish white, surrounded by a white glistening halo, excavated eight D. The retinal vessels at the nasal side emerged abruptly from the depth (perhaps cilioretinal), those at the temporal side could be seen a short distance toward the center. In the retina, with relatively small vessels, were sparse pigment plaques. There was no coloboma of the uvea, and the anterior segment and refractive media showed nothing abnormal.

A small piece of the optic nerve with the disc was resected with conservation of the blind eyeball, and examined microscopically. Peculiar findings as to traces of nerve, vessels, and muscle tissues are described in detail.

*C. Zimmermann.*

Oliver, K. L., and Crowe, S. J. **Retrobulbar neuritis and infection of**

**the accessory nasal sinuses.** Arch. of Otolaryng., 1927, v. 6, Dec., p. 503.

Infection of the accessory nasal sinuses is one of the common causes of retrobulbar neuritis, but only a small percentage of patients with infection of the sinuses have retrobulbar neuritis as a complication. The anatomic variations of the sinuses are considered. Ten case reports are well presented and are illustrated by perimetric fields. The microscopic appearance of the mucous membranes removed at operation, as well as x-ray findings, substantiate the authors' position as to one possible etiologic factor in cases of retrobulbar neuritis. Very satisfactory improvement in vision was usual after freely opening the sinuses involved.

*D. H. O'Rourke.*

Tyson, H. H. **Radiology of optic foramen.** Trans. Ophth. Soc. United Kingdom, 1927, v. 47, p. 377.

In a colony for the feeble minded, sixteen patients ranging from twelve to thirty-nine years in age were examined ophthalmoscopically, and roentgenograms made of their optic canals. There were sixteen malformed canals and eleven smaller than normal. Where the normal diameter would have been 4.3 mm. the diameter was 2.2 mm. in four, and 2.6 mm. in four others. The nerve in the smaller canal always showed most evidence of atrophy. No normal optic nerve had been found in which one diameter of the canal was 2.8 mm. or less, although the other diameter might be normal. Of the sixteen malformed canals, fourteen contained atrophic nerves; while in thirteen normal canals only one contained an atrophic nerve. Tyson concludes that malformed optic canals can be recognized in the living, that narrowing of the lumen does not exert a deleterious effect upon the nerve, and that the intensity of the damage is dependent on the degree of malformation.

E. J.

## 12. VISUAL TRACTS AND CENTERS

Lodge, S. D., Walker, G. F., and Stewart, M. J. **Aneurysm of the left internal carotid artery simulating pituitary tumor.** Brit. Med. Jour., 1927, Dec. 24, p. 1178.

The clinical history, autopsy findings, and histologic examination of such a case throws a valuable light on the possibilities of the pathology involved where the picture is apparently one of brain tumor. The pathologic report verifies perfectly one of the possibilities brought out in the work of de Schweinitz in regard to intracranial vascular lesions, sclerosis, and so on.

*D. H. O'Rourke.*

Magitot, A. **Nervous recurrence and axonic reflexes in ophthalmology.** Ann. d'Ocul., 1927, v. 164, Dec., pp. 897-915.

This is the first of a series of discussions on this subject. The author begins with an introduction and general review of vasomotor innervation, axonal reflexes, and antidromic action. From this he proceeds to the relationship of antidromic actions to ophthalmology. Because of limitations of space, abstracting fails to show the logical sequence of the thought. A few important points only can be set down.

Three or four days after section of the ophthalmic branch of the trigeminal nerve, vasodilatation occurs in the area of nerve distribution. This the author attributes to recurrent or "antidromic" irritation of the protoneurons of the sensory nerves. This is associated with a lasting reduction in retinal arterial pressure.

Certain corneal inflammations occur more readily in the absence of corneal sensibility but are not due solely to this anesthesia, because nuclear lesions of the fifth nerve producing anesthesia do not cause them. Such inflammations may occur in lesions producing hyperesthesia, and are due to irritation.

Trophic conditions are associated with the sensory nervous system. After section of the ophthalmic branch of the fifth nerve there is hypotonus due to lowered capillary pressure. There is also a small pupil.

In herpes zoster ophthalmicus, redness and edema, often out of proportion to the eruption, are manifestations

of peripheral vasodilatation through antidromic action.

The author concludes that lesions of zoster are due to a derangement of cellular metabolism which is under control of the nerves of sensation.

*L. T. P.*

Veillon, Tissier, and Morax. **Transitory amaurosis associated with typhoid fever.** Ann. d'Ocul., 1927, v. 164, March, pp. 160-165.

This was a case of severe typhoid fever caused by the bacillus of Eberth. During the third week of the fever there developed a slowly increasing amaurosis. By the fifth week blindness was total. The eyegrounds were always normal, as were the motility and pupillary reflexes. Blindness persisted for several weeks and slowly cleared so that two months later vision was practically normal. The authors consider a toxemia affecting the occipital visual centers as the most likely cause for the condition. *L. T. P.*

## 13. EYEBALL AND ORBIT

Kollowa, I. **Microphthalmus and coloboma in a case of congenital cleft of the face.** Arch. f. Augenh., 1927, v. 98, Sept., p. 365.

Kollowa's patient had a lateral congenital cleft extending from the mouth to the rudimentary ear on the left side. The left eye was microphthalmic and showed a coloboma of the iris, choroid, and retina. *F. C. Cordes.*

Lo Russo, Donato. **Complications on the part of the globe in orbital cellulitis.** Ann. di Ottal., 1927, v. 55, Jan.-Feb., p. 131.

Two cases are reported. In one the cellulitis followed erysipelas, and resulted in complete blindness of one eye, with the picture of simple optic atrophy, which the author believes was from compression of the nerve, although from the frequency with which atrophy follows cellulitis due to erysipelas compared with that from other sources, it seems likely that toxins from the streptococcal infection also play a part. In the other case, a cut on the brow was the source of the infection. Vision was reduced to 1/120, the retina was edematous, the nerve swollen, and the arteries very small. Two months later the edema had disappeared, and eighteen months later vision had returned to 1/12, but the field was cut down to within ten degrees. It seems likely that in this case a thrombosis of the central artery was produced by the cellulitis.

*S. R. Gifford.*

Merkel, F. **A rare form of congenital fissure of the eye.** Arch. f. Augenh., 1927, v. 98, Sept., p. 347.

Merkel reports a one-sided microphthalmus with a coloboma of the iris, ciliary body, and choroid in four rabbits of one litter. *F. C. Cordes.*

Peyrelongue, E. de, and Baur, F. **Pulsating exophthalmos with improvement by ligature of the common carotid.** Arch. d'Ophth., 1926, v. 43, Nov., p. 684.

The history and examination of an officer who developed pulsating exophthalmos after a wound in the orbital region are given. Ligation of the common carotid caused a recession of the exophthalmos, loss of pulsation, and ability to move the eye and open the lids. The vision was completely lost before the ligation and remained so. There was a good review of the literature on pulsating exophthalmos.

*M. F. Weymann.*

Rateau, J. **A case of tenosynovitis following mumps.** Arch. d'Ophtal., 1928, v. 45, Jan., p. 51.

Ten days after an attack of mumps, a man of thirty years had pain on movement of his eyes. All ocular findings were normal except tenderness to deep pressure, especially over the pulley of the superior oblique. A diagnosis of tenosynovitis was made, and the pain disappeared in about ten days under the use of thirty grains of sodium salicylate per day by mouth.

*M. F. Weymann.*

Sondermann. **Stump formation after enucleation.** Klin. M. f. Augenh., 1927, v. 79, Dec., p. 786.

To insure better action of the muscles, the tendons are attached to the conjunctiva previous to their separation from the sclera. After implantation of fat the conjunctiva is closed with a purse string suture.

*C. Zimmermann.*

Stone, L. S., and Ussher, N. T. **Return of vision and other observations in replanted amphibian eyes.** Proc. Soc. Exper. Biol. and Med., 1927, v. 25, Dec., p. 213.

Operations on larvæ of amblystoma punctatum (19 to 23 mm.) and adult diemyctylus viridescens are reported. The eyes were excised under the compound dissecting microscope. Among the positive results recorded in some replants were: return of circulation; corneal reflex demonstrable; return of ocular movements; normal size of pupil; reaction of pupil to light; and return of vision.

*D. H. O'Rourke.*

## 14. EYELIDS AND LACRIMAL APPARATUS

Abraham, A. **Mikulicz' disease.** Med. Klin., 1926, v. 46, Nov. 12, p. 759.

Report is given of an atypical case of Mikulicz' disease, in a man, with symmetrical swelling of the tear glands and salivary glands, except the parotid. The spleen was enlarged, also the glands about the duodenum, causing local symptoms. The blood picture is given. Cure seemed to be effected by a combination of internal administration of arsenic and use of roentgen rays. *Beulah Cushman.*

Awguschewitsch and Nikolaewa. **Treatment of dacryocystitis with bouillon vaccine of Besredka.** Zeit. f. Augenh., 1927, v. 63, Dec., p. 334.

After rinsing the tear sac with normal saline solution the authors injected bouillon vaccine into the sac with a lacrymal needle and syringe. The vaccine consisted of the clear fluid from a culture grown in one per cent sugar bouillon for eight to fourteen days and heated to 60° C. for one hour. Staphylococcus, pneumococcus, and autogenous vaccine were used, and the number of injections varied from two to twenty-four. There were acute and chronic cases, purulent and phlegmonous, a series of thirty-one cases. The acute inflammation usually disappeared rapidly, and a thin watery fluid soon replaced the purulent contents of the sac. Of twenty-seven purulent cases twelve healed completely both clinically and bacteriologically, after treatment of from seven days to two months. In ten cases there was improvement. In phlegmonous cases and chronic ones with ectasia of the sac (five cases) there was complete failure.

*F. H. Haessler.*

Dupuy-Dutemps, L. **Blepharoplasty.** Ann. d'Ocul., 1927, v. 164, Dec., p. 915.

In case of removal of the lower lid for neoplasm, the author describes a plastic operation. The upper lid is split at its margin, the skin and subcutaneous tissue being dissected free from the underlying tarsus and conjunctiva throughout the whole extent of the lid. The lower flap is then sutured to the conjunctival border of the lower lid and the upper flap to the skin border. Several weeks later the cutaneous part of the upper lid is freed, and a tongue-like flap of skin from above the eyelid is dissected free except as to a base near the nose, and is transplanted downward to fill the gap made by freeing the skin of the upper lid. This flap is then sutured to the upper lid at its ciliary margin and to the subcutaneous border of the lower lid. About one month later the skin and deeper tissues are divided at the ciliary margin of the upper lid, thus forming a new lower lid. The article is illustrated with cuts and photographs.

*L. T. P.*

Maxwell, E. M. **Lacrimal gland tumor treated by radium.** Trans. Ophth. Soc. United Kingdom, 1927, v. 47, p. 441.

A woman of 49 years noticed a swelling of the orbit, which five years later was treated by twenty-seven exposures to x-rays. There was recrudescence in the growth four years after that, the eye protruding twelve mm. in advance of its fellow, with pain, diplopia and defective vision. After two courses of radium, pain and diplopia had disappeared, and the proptosis was only 6 mm. This was maintained for several months. E. J.

Pacalin, G. **Stenosis of lacrimal passages.** Ann. d'Ocul., 1927, v. 164, Dec., p. 951.

For the treatment of stenosis of the lacrimal passages, the author advocates slitting the superior canaliculus into the extreme angle of the palpebral fissure, and the passage of large probes, such as Bowman's Nos. 10-11-12, into the nose. The following day an irrigation with 1/5000 mercury cyanide is used. A minute description of the operation with the anatomy of the region is given, as success depends on following exactly the technique outlined.

*L. T. P.*

Pavia, J. L., and Dusseldorp, M. **Tuberculosis verrucosa of the eyelid.** La Prensa Medica, 1927, v. 14, Nov., 30, p. 705.

The authors describe, in a child of ten years, an undoubted rare case of ulcerating wart of the upper eyelid, which was excised and did not return. The illustrations accompanying the article give evidence of tuberculosis formation, with giant cells but without bacilli, and physically there was apparently no other evidence of tuberculous processes, as the preauricular glands and other lymphatic glands were not enlarged. The authors state that warty growths of tuberculous nature are seen in people who come into contact with tuberculous animals, as physicians, veterinaries, hospital employees, and workers in abattoirs, and chicken houses. In these people the warts are usually found on the hands, rarely on other parts of the body. They are formed of vegetations with many fissures and miliary abscesses. The disease is chronic but there exists a tendency to cure. The authors have been able to produce such skin growths by autoinoculation in tuberculous subjects.

*H. V. W.*

Polyack, G. D. **External dacryocystorhinostomy.** Ann. d'Ocul., 1927, v. 164, Dec., p. 942.

The author describes his method of performing the Toti operation and cites a series of cases with 74.5 per cent complete success, 18 per cent relative success, 7.5 per cent failures. He believes it to be the best operation for dacryocystitis.

*L. T. P.*

Weekers, L. **Treatment of spastic entropion by alcoholization of the facial nerve endings in the lid.** Arch. d'Ophtal., 1928, v. 45, p. 20.

In cases of spastic entropion of the lower lid, one-half to three quarters c. c. of four per cent novocain is injected along a line about three mm. from the free border. After five or ten minutes one-half to three-quarters c. c. of eighty per cent alcohol is injected along the same line. This treatment is painless. There is a moderate edema which disappears in about eight days. The effect upon the entropion is immediate, as the nerve endings are at once paralyzed. There is some induration remaining at the site of injection, which tends to help the result. In one case there was slight sloughing of the skin. The treatment has also been effective in cases of slight trichiasis by producing a moderate eversion of the lid. In cases of marked blepharospasm an injection of four c. c. of alcohol in the region and manner used for akinesia prior to cataract operation gave marked improvement in some cases. In one patient the improvement has lasted for two years. The results in spastic entropion have been exceptionally good, but one must follow the technique accurately.

*M. F. Weymann.*

## 15. TUMORS

Cange, A., and Duboucher, H. **Melanotic sarcoma of the limbus, and generalized secondary cutaneous sarcomatosis.** Arch. d'Opht., 1926, v. 43, Nov., p. 673.

An original examination of a patient with melanotic sarcoma of the limbus and ninety-five or more metastatic nodules over the skin is reported. No postmortem examination was obtained, but biopsy findings on several nodules are given. *M. F. Weymann.*

Gutmann, Adolf. **Piezometer for the diagnosis of retrobulbar orbital tumors.** Zeit. f. Augenh., 1927, v. 63, Oct., p. 137.

The author has devised an instrument which measures in tenths of a millimeter the distance which the bulb can be displaced back into the orbit by the application of a weight. In cases of solid tumor (fibroma, carcinoma) he has observed displacement of from 0.2 to 0.7 mm. less on the side with the tumor than on the normal side. *F. H. Haessler.*

Poleff, L. **Pathology of epithelial tumors of the cornea and limbus.** Arch. f. Augenh., 1927, v. 98, May, p. 66.

Poleff reports eighteen epithelial tumors of the cornea and limbus. These he classifies according to their histological structure into (1) epithelioma initiale, (2) epithelioma papillomatosum, and (3) epithelioma carcinomatosum. Aside from the value of this classification as related to the histological structure, it also denotes the degree of malignancy. *F. C. Cordes.*

Schuster, S. A. and F. P. **Lipoma of the orbit, case report.** Texas State Jour. of Med., 1927, v. 23, p. 541.

The authors report a case of lipoma of the orbit, and point out that the literature contains but few reports of these cases, and also that there seem to be differences of opinion as to the nature of the lesion. The pathologic report confirmed the clinical diagnosis. *D. H. O'Rourke.*

Speciale-Picciche. **Lymphoma of the conjunctiva.** Ann. di. Ottal., 1927, v. 55, May-June, pp. 412-418.

The author reports a new case of this condition, which, with several cases previously published, demonstrates the rapid effect of the x-ray in clearing up these lesions. The tumor arose from the lower cul-de-sac, and involved most of the bulbar conjunctiva, the cornea being surrounded by a reddish granulomatous tissue. The iris was congested, and the lower chamber angle contained exudate. Examination of the blood showed nothing abnormal, and there were no enlarged lymph nodes to be made out elsewhere in the body. Sections of a piece of the tumor removed for biopsy showed it to be composed chiefly of small lymphocytes, with some plasma cells. A month after one x-ray treatment, the new growth had completely disappeared, the exudate had been absorbed from the chamber, and vision had improved markedly. Sections of a nodule removed eight days after the exposure showed the lymphoid tissue undergoing regression, small foci being surrounded by new-formed connective tissue. (Bibliography, case photographs, and microphotographs.)
*S. R. Gifford.*

## 16. INJURIES

Anthony, D. H. **Injuries of the orbital portion of the optic nerve.** New Orleans Med. and Surg. Jour., 1928, v. 80, Feb., p. 519.

The author lists the occurrence of injuries produced by direct injury, such as stab wound, intraorbital foreign body, or at the time of operation for removal of tumor of the nerve or orbit. Under indirect injuries he considers fractures of the skull, fractures of the orbit, contusions of the globe, and dislocation of the globe. To illustrate each of these possibilities a case report is given—twelve cases in all, making the article a practical and interesting survey of the subject.
*D. H. O'Rourke.*

Herrenschwand, F. **Typical eye injuries in skiing.** Zeit. f. Augenh., 1927, v. 63, Oct., p. 142.

One is surprised at the severity of injuries (rupture of eyeball, fracture of orbit, and others) resulting from accidental blows to the eye with ski or stick. The injuries which are detailed, however, do not differ essentially from other blunt injuries.

*F. H. Haessler.*

Kennon, B. R. **The report of a case of injury to the skin and eyes by liquid sulphur dioxide.** Jour. Ind. Hygiene., 1927, v. 9, Nov., p. 486.

The case justified the belief that sulphur dioxide is not poisonous under any ordinary circumstances, and that the ill effects of exposure to liquid sulphur dioxide are due solely to rapid freezing of the tissues and not to any escharotic action such as is seen after accidents due to lime, ammonia, or other caustics. In the more involved eye the cornea was completely denuded of epithelium, but the substantia propria was clear. After five weeks the vision was 20/100; after four months, 20/15.

*D. H. O'Rourke.*

Kraupa, E. **Industrial lens injury in glass makers.** Arch. f. Augenh., 1927, v. 98, May, p. 135.

Glassblowers' cataract having been classified in Germany as a result of industrial injury, Kraupa became interested in the subject. He examined one thousand workers over forty-five years of age employed in the glass factories of Teplitz. The examination included slitlamp study. He classifies industrial lens injuries of glassblowers as follows: (1) a clouding of the lens capsule; (2) posterior polar haze. The first condition he found in twenty-six of the one thousand cases and the second in eleven cases. In addition, he found in fifteen cases the fine opacities at the pole without impairment of vision. "Gray" cataract is not the direct result of the industrial injury but a complication. This cataract should not be called glass blowers' cataract but fire cataract (Feuerstar), as it may develop in any industry where men are exposed to molten substances or fire.

*F. C. Cordes.*

Lafon, C. **Mydriasis and retinal angiospasm from metallic intraocular foreign body.** Ann. d'Ocul., 1928, v. 165, Jan., pp. 15-28.

The author describes three cases of failing vision associated with mydriasis following penetration of an eye by a metallic foreign body. He reviews the literature on the subject. He noted constriction of the arteries, which he believes accounts for the lowered vision. He attributes this constriction to an angiospasm caused by an irritation of the vasomotor system, for which the direct action of the foreign body is responsible. The mydriasis he attributes to diminution of the tone of the sphincter, due also to the foreign body. He does not regard these two actions as incompatible, citing vasoconstriction of the face and dilatation of the pupil on excitation of the cervical sympathetic as being analogous.

*L. T. P.*

Lewitsky, M. **A method of localization of pathologic changes in the fundus and their projection on to the outer surface of the sclera.** Zeit. f. Augenh., 1927, v. 63, Oct., p. 163.

Accurate localization of fundus lesions in relation to a point on the outer surface is important in the surgical removal of a cysticercus. The patient fixes the zero point of a hand perimeter. With an ophthalmoscope the lesion is located and the position of the ophthalmoscope noted on the perimeter arm and dial. The author gives a table which enables one to use these data in determining how far from the limbus a scleral incision must be made in order to reach the lesion visible in the fundus.

*F. H. Haessler.*

Shroff, C. N. **Extraction of thorn from the orbital cavity.** Brit. Jour. of Ophth., 1928, v. 12, Feb., p. 94.

This is a record of a patient with a date-palm thorn in the upper lid.

Ten days later, when observed, there was present a tumor the size of a small nut near the nasal end of the upper lid. Upon incising the mass the thorn came out. *D. F. Harbridge.*

Teräskeli, Hilja. **Severe ammonia burns of both eyes.** Acta Ophth., 1927, v. 4, no. 3, p. 274.

The case reported by Teräskeli was in a laborer of 28 years whose face and eyes were burned by a ten per cent solution of ammonia. No treatment was received for 24 hours. Beside the changes in the skin, conjunctiva, and cornea, which one would expect, there were atrophy of the iris and cataract caused by diffusion of the ammonia through the cornea.

*E. M. Blake.*

## 17. SYSTEMIC DISEASES, INCLUDING PARASITES

Aron, Fritz. **Injury of an eye by the poison of a native garden spider** (Epeira diadema Walck). Klin. M. f. Augenh., 1928, v. 80, Jan., p. 80.

A man aged fifty-one years crushed a garden spider with a hammer. The juice squirted into his right eye, causing a very painful severe conjunctivitis, defects of the corneal epithelium, and chemosis, which disappeared after five weeks without lasting damage. The poison of the garden spider contains two toxins: arachnotoxin and arachnolysin, whose characteristic actions are hemolytic, damaging the bloodvessels and increasing the reflex excitability of the spinal nerves. Experiments on the eyes of eight rabbits confirmed this.

*C. Zimmermann.*

Schwartz, W. A. **Copper foreign bodies in the eye with report of thirty-seven cases.** Southwestern Med., 1927, v. 11, Nov., p. 504.

The author gives a decidedly worth while résumé on this subject, particularly as to the tolerance of the various tissues of the eye to copper. Suggestions as to removal of intraocular copper particles are given, depending upon their location, and also a report of thirty-seven cases encountered in the author's own practice and in that of the late Dr. Martin. Nineteen eyes of this group were enucleated; eighteen eyes were saved and from four of these copper had been removed; copper was retained in fourteen cases with vision varying from 20/20 to 15/100.

*D. H. O'Rourke.*

Terrien, F., and Vail, P. **Disturbances of convergence and of motility of the pupil following epidemic encephalitis.** Arch. d'Opht., 1926, v. 43, December, p. 709.

Original observations upon two patients are reported. The first had a divergent strabismus of the right eye, concomitant and accompanied by crossed diplopia for near, paralysis of accommodation, anisocoria, and complete immobility of both pupils. There was also a hypoexcitability of the right labyrinth. There was no evidence of Parkinsonism. The second patient showed the same ocular disturbances as the first, but with Parkinsonism and with no disturbances of the right labyrinth. It is not thought that the theory of hypertony of the external rectus muscles will explain the condition found. *M. F. Weymann.*

## 18. HYGIENE, SOCIOLOGY, EDUCATION AND HISTORY

Brewster, J. W. **Eye examinations as a factor in the reduction of industrial accidents.** United States Naval Med. Bull., 1928, v. 26, p. 69.

The statistical data reported are based on a twelve months campaign for the avoidance of eye injuries. The system evolved for recording accidents permitted more accurate placing of the responsibility, and an index for measuring the success of preventive measures taken. Accidents were recorded under the following headings: safety lacking; failure of employee; unsafe practices; unavoidable. Following a publicity campaign, the employment of safety devices, and the examination of all workmen's eyes as to need of glasses, eye accidents were reduced from 156 during a period of twelve months to 43 in the succeeding twelve months, despite a thirty per cent increase in the number of men employed.

*D. H. O'Rourke.*

Brown, E. V. L. **The division of ophthalmology in the new university of Chicago School of Medicine.** Arch. of Ophth., 1928, v. 17, March, p. 190.

In this brief report the author gives the general outline of this new department in the University of Chicago, the most interesting feature of which is a rather unique arrangement of combining rooms for ophthalmoscopy, retinoscopy, etc., with refraction ranges and apparatus. *M. H. Post.*

Hirsch, Betty. **Training of the adult blind in Germany.** Arch. of Ophth., 1928, v. 17, March, p. 178.

This extremely interesting paper by a brilliant blind author is well worthy of perusal. She reviews experiments in Germany following the war, with the war blinded and the industrial blinded. There were 2,700 war blinded alone. The patients were divided into three groups: in the first group those who had excellent education, in the second those of fair education, and in the third those with little education. These people were then prepared for occupations such as their mental training would permit.

The condition of the blind was greatly improved by a law passed in 1919, and was further bettered by an amendment in 1923. One provision of this law was that each employer of at least twenty healthy people must employ one heavily disabled, and for each fifty additional at least one disabled. This covered private enterprises, corporations, and public institutions. An employer might, in lieu of employing such a disabled person, give him a settlement and not use him in his business. This greatly stimulated the desire on the part of the blind for training in various vocations.

The author also speaks of the shepherd dogs trained as guides for the blind. There are now 1,600 in use.

*M. H. Post.*

Newmayer, I. Weir. **A survey of the semiblind school children in the city of Philadelphia.** Atlantic Med. Jour., 1927, v. 31, Dec., p. 168.

From a survey of the semi-blind school children in Philadelphia, in which the methods of procedure are accurately and instructively given, a few suggestions deserve consideration by ophthalmologists. In part these are the need for specialized medical advice on equipment and conduct of sight-saving classes for medical supervision by ophthalmologists and for an organized campaign to educate parents as to the urgent need of early correction of defective vision due to errors of refraction. *D. H. O'Rourke.*

# NEWS ITEMS

News items in this issue were received from Drs. F. L. Beck, Cheyenne, Wyoming; Eugene M. Blake, New Haven, Connecticut; H. Alexander Brown, San Francisco, California; C. A. Clapp, Baltimore, Maryland; Julius Fejer, Budapest, Hungary; Gaylord C. Hall, Louisville, Kentucky; John G. McLawrin, Dallas, Texas; M. Paul Motto, Cleveland, Ohio; and G. Oram Ring, Philadelphia, Pennsylvania. News items should reach **Dr. Melville Black,** Metropolitan Building, Denver, by the twelfth of the month.

### Deaths

Dr. Howard Cameron of Sacramento, California, died suddenly on March twenty-first, at the age of fifty-six years.

Dr. Richard H. Satterlee, Buffalo, New York, aged sixty-six years, died January nineteenth of myocarditis and lobar pneumonia.

Dr. Brownlow Riddell died suddenly in Glasgow, on January nineteenth, 1928. For his wartime services he was awarded the O.B.E.

### Miscellaneous

Dr. Adalbert Fuchs writes from Vienna requesting announcement of the fifth postgraduate course in ophthalmology, to be given in that city between October 1 and December 4, 1928, under the auspices of the American Medical Association of Vienna, at the first and second eye clinics of the Allgemeines Krankenhaus.

The printed announcement reminds us that this course was started in 1922 as the result of a suggestion by Dr. Edward Jack-

son to Dr. Emil Fuchs. The list of lecturers and instructors this year will include Professor E. Fuchs, Professor J. Meller, Professor K. Lindner, Professor Lauber, Dozents A. Fuchs, Bachstez, and Guist, and assistants Safar, Urbanek, and Sallmann. From other departments special lectures will be given by Professor Schüller on roentgen rays, Professor Hirsch on the hypophysis and sinuses, Dozent Kofler on the modified West operation, and Dozent Kumer on radium treatment, and by assistant Pollitzer on embryology. A preliminary knowledge of ophthalmology is necessary. The entire course is given in English, for a minimum of ten and a maximum of sixteen pupils. The individual fee is $240.00 Applications, which will be accepted in order of priority, should be sent to Dozent A. Fuchs, Vienna VIII, Skodagasse 13, with certified check for $50.00.

Dr. Julius Fejer writes from Budapest as follows: "As is known, the head of the second university eye clinic in Budapest, Professor Dr. Carl Hoor, died at the beginning of this year. The College of Professors of the medical faculty has unanimously proposed Alternate Professor Dr. L. von Blaskovics for this appointment. The appointment will occur shortly. Professor Blaskovics is a very capable operator, and has devised many operative procedures and modifications which have established themselves in daily practice. His personality is a great gain for our university both from the didactic and from the creative standpoint."

The Wilmer Institute is nearing completion, and the out-patient department expects to move into its new quarters by May first.

The Western Ophthalmic Hospital, Marylebone road, London, is to be pulled down and rebuilt. It was built by George III, either, it is said, as a shooting box for himself, or as a country lodge for his children. Its walls have become so unsafe that its Committee of Management has decided to rebuild, and has called for subscriptions for that purpose. Thirty thousand pounds have been asked for, of which twenty-five thousand pounds have been subscribed. About 1889 Casey A. Wood, who was doing some postgraduate work in London, was given an opportunity to act (locum tenens) as attending surgeon to the out-patient department, and it was there that he performed his first major operation on the eye. (Dr. and Mrs. Wood are now sojourning at Palo Alto, California.)

A recent issue of the Optometric Weekly printed, with a self-appreciative comment, the following statement:

> "The traffic Bureau of Washington, D.C., in their licensing of automobile drivers, not only recognize the examinations by optometrists, but actually refuse to recognize any other certifications, including those of the oculists, in regard to applicants' visual acuity."

Upon inquiry at the Traffic Bureau in Washington, it appears that, if an examination of visual acuity at the Bureau indicates poor vision in an applicant, the latter is given a printed list of optometrists. A similar condition exists at the Maryland Traffic Bureau, where the eyes are examined by an optometrist and, if the vision is poor, the applicant can be referred to an optometrist. In Maryland, the automobile commissioner was unable to get any oculist to give his time for this examination, while the optometrists agreed to furnish a man for this purpose. But there is nothing to prevent the applicant selecting an oculist in place of the optometrist, in which case the oculist's examination is duly accepted. A similar condition probably exists in the District of Columbia.

We have received from Mr. Arthur F. Williams, a member of the Guild of Prescription Opticians of America, at Saint Paul, Minnesota, an excellent pamphlet prepared for distribution to his customers, entitled "What's inside the eye". A brief account of various ocular disorders is accompanied by reproductions of colored plates of typical fundus and external conditions; and emphasis is laid upon the importance of thorough medical training for appreciation of the relationship between eye disturbances and general health or disease.

Miss Mildred G. Smith, R.N., formerly educational agent of the Minnesota State Department of Health, has been appointed staff associate of the National Society for the Prevention of Blindness, with headquarters in New York City. Miss Smith will act as liaison officer between the Society and the various nursing organizations, public and private.

### Societies

The Pacific Coast Oto-ophthalmological Society held its convention in Santa Barbara on April 19 and 20.

The annual dinner of the ex-house surgeons of the Manhattan Eye, Ear, and Throat Hospital of New York took place April 21.

Dr. Marc Landolt, retiring president of the Société d'Ophtalmologie de Paris, is succeeded by Dr. Magitot, who will serve as president for the current year.

At a dinner meeting of the Ophthalmological and Oto-laryngological Section of the Cleveland Academy of Medicine, held at the University Club, March 30, 1928, the following program was presented: "Methods used in testing and recording latent muscle anomalies," Dr. J. E. Cogan; "Pulsating Exophthalmos, traumatic," Dr. Paul G. Moore; "Retinoblastoma," Dr. W. L. Fox. Dr. M. P. Motto showed a case of left superior rectus insufficiency. There were

twenty members and guests present at the meeting.

On March 6, 1928, the Eye, Ear, Nose, and Throat physicians of Dallas, organized the Dallas Academy of Ophthalmology and Otolaryngology. The following were elected officers for one year: Dr. John O. McReynolds, president; Dr. J. S. Dimmitt, vice president; Dr. W. Mood Knowles, recording secretary-treasurer; Dr. John G. McLaurin, corresponding secretary. The purpose of the organization is to study ophthalmology and otolaryngology, to have eye, ear, nose and throat clinics conducted under its auspices, and to arrange special courses of study in ophthalmology and otolaryngology. Eligibility to membership is dependent upon three years of active practice in eye, ear, nose and throat work, and upon membership in the American Medical Association. Meetings are to be held once each month, except that in July, August, and September there will be no regular meetings. The meetings in November, February, and May will be in the afternoon and evening, the afternoon sessions being clinical. It is intended that one meeting each year shall be held outside of Dallas, upon invitation from some city in the vicinity.

### Personals

Dr. Frank Conroy of Santa Cruz, California, has located in San Francisco.

Dr. Leon H. Collins, Jr., of Philadelphia, has been appointed internist to Wills Eye Hospital.

Dr. William J. Burdashaw and Pierre G. Jenkins, of Philadelphia, have been appointed residents to Wills Eye Hospital.

Dr. George L. Strader, Cheyenne, Wyoming, was recently elected chief of staff of Frances Warren Pershing Memorial Hospital.

Dr. E. Terry Smith of Hartford, Connecticut, is spending the winter in Florida.

Dr. Dorland Smith of Bridgeport, Connecticut, spent January and February in Florida.

Dr. I. S. Wygodski of Baltimore has been given a leave of absence from the Wilmer Institute on account of ill health.

Dr. Harvey W. Woodruff of Joliet, Illinois, was a caller in Baltimore the first of April.

Dr. M. W. Jacoby was recently appointed consulting ophthalmologist to the new St. Luke's Hospital, Cleveland.

Dr. J. T. Fawcett of the ophthalmological division of the Lakeside Hospital, Cleveland, announces the opening of his office in Elyria, Ohio.

Drs. W. E. Bruner and Roy B. Metz, of the ophthalmic division of the Lakeside Hospital, Cleveland, recently returned from a six weeks holiday in Florida.

Drs. A. S. and L. D. Green are opening up a new eye hospital, in San Francisco, which will be a combination of office space for their use and a hospital for eye cases.

Dr. George F. Suker of Chicago has been having an interesting tour of Central Europe. A letter mentioned especially the clinic of de Grosz at Budapest and that of Elschnig at Prague.

Dr. Adolph O. Pfingst has tendered to the Board of Trustees of the University of Louisville his resignation as professor of ophthalmology and chief of the eye service at the clinic of the City Hospital.

Dr. Herman C. Little has finished his training at the New York Postgraduate Medical School and is associated with Dr. Eugene M. Blake of New Haven, Connecticut.

Dr. E. L. Burky, who has been working in the research laboratory of the Wilmer Institute, has resigned to accept a position with the Rockefeller Institute, and is located at Andalusia, Alabama, working on the bacteriology of the common cold.

Dr. L. W. Morsman, of Hibbing, Minnesota, who gave a forty hour course on slit-lamp technique and diagnosis at the University of Minnesota from March 27 to April 5, expects to repeat this course some time next autumn.

Dr. H. V. Würdemann of Seattle addressed the Bexar County Medical Society in San Antonio, Texas, March 22, the subject being "Industrial lighting." April 3 he was the guest of the San Antonio Eye, Ear, Nose, and Throat Society, speaking on "Difficulties in the diagnosis of intra-ocular tumors".

At a recent meeting of the Board of the City Trusts of Philadelphia, Dr. Joseph G. Klauder was elected to the staff of Wills Eye Hospital as dermatologist and syphilographer. Dr. Klauder is also professor of dermatology in the Graduate School of the University of Pennsylvania.

The following is an extract from the "Evening Sun" of Baltimore, dated April 5: "A remarkable family is coming to Baltimore next fall. In private life they are Dr. and Mrs. Clarence Erroll Ferree. But in the world of science they are known as Ferree and Rand, leaders of research in optical problems. Dr. Ferree comes to take the position of resident lecturer at Wilmer Institute at the Johns Hopkins medical school and director of the research laboratory in physiological optics. . . . . For twenty years Dr. Ferree has been a member of the faculty of Bryn Mawr College. He was made professor of psychology there in 1917. Dr. Ferree and Dr. Rand were married in 1919. Dr. Rand was made a member of the Bryn Mawr faculty in 1913."